

# Eco-Innovation Manual

Working version for Pilot Application

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# Eco-Innovation Manual

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# ECO-INNOVATION MANUAL

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# Contents

# Glossary of key terms

**Business model** describes how a company does business. It is the translation of strategic issues, such as strategic positioning and strategic goals into a conceptual model that explicitly states how the business functions. The business model serves as a building plan that allows designing and realizing the business structure and systems that constitute the company's operational and physical form. *(Osterwalder et al, 2005).*

**Business strategy** describes the long term goals of the company and the markets in which the company will operate (i.e. vision and mission) *(adapted from Andrews, 1997).*

**Life cycle** Consecutive and interlinked stages of a product (good or service), from the extraction of natural resources to the final disposal (adapted from *ISO 14040:2006*).

**Life cycle assessment** is a systematic set of procedures for compiling and examining the inputs and outputs of materials and energy and the associated environmental impacts directly attributable to the functioning of a product throughout its life cycle (*adapted from ISO 14040:2006*).

**Life cycle thinking** is a mostly qualitative approach to understand how our choices influence what happens at each of the stages of the life cycle of an industrial activity: from raw material acquisition through manufacture, distribution, product use and disposal. This approach is needed in order for us to balance trade-offs and positively impact the economy, the environment, and society *(UNEP, 2004).*

**Marketing** is the set of activities that are designed to help the company to understand the type of product it should offer to a market and communicate the benefits and value of the product to the targeted consumer. Marketing focuses on the product, promotion, price and distribution channels.

**Market analysis** is the activity of gathering information about the size, growth, profitability, target groups and existing products of a market, which is used to inform decision making at a strategic level. This specific activity would fall under the broader umbrella of **marketing** activities.

**Organization structure** refers to the range of activities and key resources (human and financial) within the company, in addition to those relating directly to production, that are dedicated to supporting the **business model**. These include procurement processes, distribution, key partnerships, customer relationships and interfaces, research and development, internal communication, and revenue generation.

**Partners** refer to parties in the **value chain** that provide or receive value including suppliers, outsourced workers, contractors, customers, consumers, clients, members, and others (*ISO 26000:2010*).

**Roadmap** is a planning tool used to support the implementation of strategies. It is made-up of a series of projects that will help to progress the organization from the company's current position towards fulfilling the organization's goals *(adapted from Phaal R et al, 2007).*

**Stakeholder** is any group or individual who can affect, or is affected by, an organization or its activities. Also, any individual or group that can help define value propositions for the organization (*Stakeholder Research Associates Canada Inc., United Nations Environment Programme, AccountAbility: Stakeholder Engagement, 2005*).

The **supply chain** is a system of organizations, technology, activities, information and resources involved in moving a product or service from supplier to customer (*Michael Porter 1985*).

**Value** is understood to involve creating economic value (the revenue that a firm gets in return for its goods or services) in a way that also creates positive outcomes for society by addressing its needs and challenges, taking into account economic, environmental and social considerations (*adapted from Porter & Kramer, 2011*).

A **value chain** is the entire sequence of activities or parties that provide or receive value in the form of products or services (e.g. suppliers, outsource workers, contractors, investors, R&D, customers, consumers, members) (*ISO 14001 CD2, 2013*). See also **Partners** definition above.

**Value proposition** refers to the products or services that an organization offers to a specific market segment that the organization believes will create value for that specific market segment.

## About this manual

*Aim of this manual*:
To introduce a methodology for the implementation of eco-innovation within small and medium sized companies in developing and emerging economies. The intended audience of this manual is organizations that provide professional services to guide and support manufacturing companies to improve their sustainability performance.

*Objectives of this manual:*

- To introduce to the concept of eco-innovation.
- To present a methodology for eco-innovation implementation that is relevant for Service Providers working with small and medium sized companies in developing and transitional economies.
- To clearly describe the role that a Service Provider can play in supporting companies during the implementation of eco-innovation.
- To provide a range of eco-innovation tools and resources that the Service Provider can draw upon to assist their activities.

*How to use this manual:*
The structure of this manual closely follows the process for eco-innovation implementation described in Section 0.5. It is recommended that you begin by reading the "Why eco-innovation?" section which provides: an introduction to the concept of eco-innovation; describes what is involved in eco-innovation and the skills required to support eco-innovation; and an overview of the eco-innovation process. With this basic information, you can then begin to explore the rest of the manual.

After the "Why Eco-Innovation?" section, there is a section of the manual corresponding to each of the phases of the eco-innovation implementation process. Each of the main sections follows the same structure, with an overview, then the main content, and ending with a checklist, supporting tools, and references and resources.


Throughout the manual a theoretical case study has been used to illustrate key points and demonstrate the application of the methodology and tools. Key information about the case study is provided where you see the 'Case study' symbol or text within a green box.


There are also key points in the methodology where you will need a decision or input from the CEO and Senior Management Team at the company. These points can be found where you see the 'Management milestone' symbol or text within a red box.

The term 'COMPANY'(in all capitals font) is used to refer to the company that is implementing eco-innovation and is the beneficiary of the Service Provider's services.

For this draft of the manual, there is a separate document called *Tool Instructions* where you will find detailed instructions on how to apply each of the tools and activities described in the manual.

The methodology presented in this manual is intended to be a complete and sequential approach to supporting the implementation of eco-innovation within companies. There is flexibility to adapt the

methodology (which tools to apply, how to involve the COMPANY etc.) to suit the context of the situation e.g. business culture in your country, type of COMPANY you are working with and suchlike.

Where relevant you should also refer to the Eco-innovation Sector Supplements for the agri-food, chemicals and metals sectors, which provide further detail and case studies concerning the application of the eco-innovation methodology in those sectors.

# 0. Why eco-innovation?

Before starting on the journey into eco-innovation, it is important to describe the operational approach, scope and expectations of eco-innovation, for the company that is to apply the methodology described in this manual and for you as a Service Provider.

## 0.1. What is eco-innovation?

Within this manual, the operational approach to 'eco-innovation' is defined as follows:

> ***Eco-innovation*** *is the development and application of a* ***business model****, shaped by a new* ***business strategy*** *that incorporates sustainability throughout all business operations based on* ***life cycle thinking*** *and in cooperation with* ***partners*** *across the* ***value chain****. It entails a coordinated set of modifications or novel solutions to products (goods / services), processes, market approach and* ***organizational structure*** *which leads to a company's enhanced performance and competitiveness.*

A conceptual model of eco-innovation that is based on this definition is shown in Figure 0-1 below.

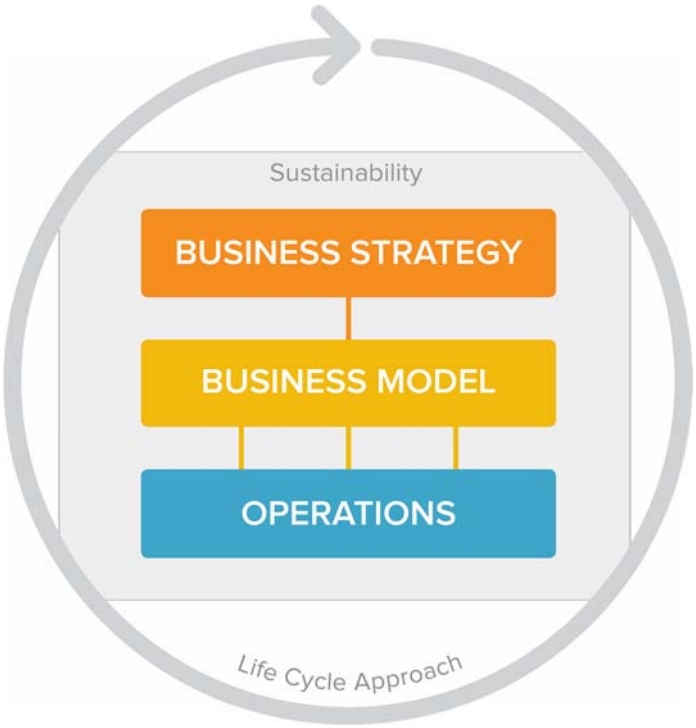



*Figure 0-1. Conceptual model of eco-innovation.*

There are a number of important points to note from this definition and model:

- **The implementation of eco-innovation must begin with a change in the business strategy** - There must be a conscious decision and commitment to embed sustainability into the business strategy of the company. Once the decision to embark upon the long journey towards sustainability implementation has been made this strategy must filter down, from the strategic level into the business model. Changes at the level of the business model then pave the way for changes at the

operational level (including the company's products, customer segments, channels, customer relationships, revenue streams, production processes, key activities, partners and cost structure). Eco-innovation is therefore a primarily 'top-down' process that begins with a change in business strategy.

- **Eco-innovation requires a holistic approach -** Eco-innovation must be holistic in terms of considering all phases of the product life cycle, from extraction of raw materials through to disposal at end of life. This will help to ensure that time and effort spent on eco-innovation helps to make significant progress against the major challenges faced by the industry and does not simply shift problems from one value chain partner or phase of the life cycle to another or from one category of problems to another.
- **Eco-innovation requires co-operation across the value chain** – The 'value chain' is the entire sequence of activities or parties that provide or receive value in the form of products or services (e.g. suppliers, outsources workers, contractors, investors, R&D, customers, consumers, members) (ISO14001 CD2, 2013). The value chain runs in parallel with the product life cycle and so if a company wants to adopt the life cycle perspective described above it will also need to consider the other actors in the value chain. Collaboration with other relevant actors in the value chain can help to maximize the impact of a company's eco-innovation activities by enabling action to be taken in the parts of the value chain that have the biggest influence on sustainability issues. It may be difficult to access, understand and take action in these critical areas of the value chain if working alone. Initiating these collaborations across the value chain requires the building of new types of relationships between suppliers, manufacturers, distributors, customers, recyclers for example, and is an important part of the challenge of eco-innovation.
- **Eco-innovation should consider all three aspects of sustainability: economic, social and environmental -** This is important because until now most companies have focused exclusively on the economic benefits they derive from their activities. Looking for reductions in environmental impact throughout the product life cycle, as well as social benefits for customers, employees and stakeholders all represent new challenges for most companies, but these are challenges that must be addressed if the company is to contribute to the development of a sustainable society and have a profitable, long-term future. The following sub-section explains how companies can gain a competitive advantage whilst making this contribution to society.

## 0.2.Why do companies need to eco-innovate?

In recent decades, there has been a growing recognition amongst manufacturing business leaders that sustainability challenges such as climate change, worker welfare and resource constraints are having a significant impact on the way manufacturing companies do business. These sustainability challenges give rise to drivers for change in the way that companies operate. Sticking with the 'business as usual' approach will leave companies unable to respond to issues such as rising energy costs, disruptions to supply of their raw materials or changes in legislation. Ultimately, companies that do not take action now run a higher risk of failure when these issues inevitably take effect in their industry.

There is therefore a growing need to find alternative approaches that can help to address sustainability-related business drivers whilst at the same time offering opportunities for growth, cost reduction and competitive advantage. Eco-innovation is an approach that aims to fulfil these multiple requirements by

identifying the key sustainability challenges and opportunities and then using these to drive changes throughout the company and its value chain, from the business strategy and business model, through to the operational level.

When starting to develop eco-innovation implementation services, it is important to understand what the business case for action will look like from the COMPANY's perspective. The experiences of companies that have successfully implemented eco-innovation have highlighted a number of ways in which eco-innovation can add value for a company. These areas are shown in Figure 0-2 and are briefly described below.


*Figure 0-2. Added value derived from eco-innovation.*

- **Access to new and expanding markets** – There are many new market opportunities for companies that eco-innovate. These might include segments of existing markets with a strong interest in sustainability, entirely new, emerging markets, or access to markets that impose stringent sustainable procurement policies and standards.
- **Increase profitability along the value chain** – Modifying production processes to reduce key impacts, designing products to allow easier recovery and reuse of materials are some of the ways to increase profitability along the value chain.
- **Stay ahead of standards and regulations** – meeting the requirements of environmental legislation is often viewed as a costly but necessary activity. However, it can also be a source of competitive advantage if, for instance, changes in regulations lead to new market opportunities that are only identified by leading companies. The benefit of this approach can be leveraged if the company takes a leadership role and is able to influence policy makers to introduce legislation that is aligned with their own best-practice.
- **Attract investments** – Large companies that are implementing eco-innovation sometimes struggle to find suppliers or partners that can make a significant contribution to their sustainability efforts. Small companies that have shown the capacity to eco-innovate can therefore attract investment

from these large companies in order to help scale-up production, improve product quality etc. Public funding and grants can also be easier to obtain if the company is able to demonstrate significant sustainability benefits as part of a funding proposal.

- **Increase productivity and technical capacity** – Workers prefer working for companies that they believe to be acting in an environmentally responsible and sustainable manner. This in turn helps the company to recruit and retain a skilled and motivated workforce, leading to improvements in productivity and product quality. Also, eco-innovation often requires new skills and competencies. Investing in relevant training to meet these needs has been shown to have a significant pay-off in terms through better working practices and greater innovation.

These drivers for eco-innovation are described in more detail and with real life examples in the accompanying publication '*The business case for eco-innovation'* (UNEP, 2014).

## 0.3.What does eco-innovation imply?

The nature of eco-innovation means that it has impact on all areas of a company, from strategy and business model through to operational activities such as design, production, purchasing and marketing. For most companies, eco-innovation will involve a transformation in how they do business. To be successful eco-innovation must ultimately become embedded in the culture and working practices of the company.

This type of transformative change can be exciting and rewarding for those involved, but it cannot be accomplished quickly or easily. It will require a significant commitment of time, resources and effort by a company over a sustained period of time to implement eco-innovation. Securing this type of commitment can be challenging.

Companies that want to pursue the rewards of eco-innovation will need to consider their capacity for innovation. Many small and medium-sized companies, particularly in conservative, low-growth industries, do not have a strong track record in research and development activities, introducing new products to their range, or implementing new ways of working. Therefore, some prior experience, skill and capability in these general innovation activities will greatly help companies that want to implement eco-innovation. Fortunately, small companies tend to be flexible and responsive which can help to overcome other deficiencies.

To be a good candidate for eco-innovation, a company should also be able to recognize the importance of the long term sustainability challenges faced by their industry and be ready to take action to turn these challenges into opportunities. This requires leadership and a culture within the company that is open, responsive and willing to take on big challenges.

There are therefore significant demands placed on a company when trying to implement eco-innovation. But for the companies that are willing to take on the challenge of eco-innovation the potential rewards are equally big and can contribute to the long term survival and success of the company.

However, finding one suitable company within a value chain that is ready and willing to take on the challenge of eco-innovation may not be enough. Tackling the type of important and complex challenges that eco-innovation is intended to address will generally require collaboration and cooperation across the value chain. Working with customers is essential to understand their needs and requirements and to assess

the acceptability of alternative solutions. Working with suppliers is often required to support changes to the design or production of the product or raw material. And where an eco-innovation involves new technology, skills or competencies that are not yet present in the value chain, it may be necessary to bring in external partners such as research institutions and universities to fill these gaps. So instead of focusing on one particular company, eco-innovation will require the support of a number of different organizations across the value chain and beyond.

Finding the right COMPANY, who is ready and able to start implementing eco-innovation, along with the right set of partners to support the eco-innovation activities can seem like a daunting prospect at first. Nevertheless, it is worth persisting as you can realize a number of significant benefits, including:

- **New services for existing markets** – In situations where revenues from companies that you have worked with in the past are declining because you have already completed several projects with them on resource efficient and cleaner production and exploited most of the 'low-hanging fruit' opportunities, eco-innovation can be a way to engage these companies in new, bigger programmes.
- **Access to new markets** – Further revenue growth can be achieved by targeting new markets, which were perhaps not suitable or interested in your existing service offerings.
- **Access to senior management** – As eco-innovation is fundamentally a strategic issue this will involve engagement with senior management at the COMPANY. This can help to raise your profile with the COMPANY and potentially provide access to larger budgets in the longer term.
- **Long-term relationships** – Eco-innovation involves a long-term commitment from a COMPANY to implementing eco-innovation. This can help to generate long-term revenue streams, in contrast to the more typical short, project-based activities.
- **Creation of a holistic way to handle sustainability issues** – Eco-innovation provides multiple-opportunities for off-shoot projects and bring you into contact with other companies in the COMPANY's value chain.
- **Positioning yourself as a sustainability thought leader** – eco-innovation is a new and exciting topic in its early stages. Sustainability demands are increasing more and more globally – it is a great opportunity for you to contribute and be a front-runner in your country in the provision of eco-innovation services.

## 0.4.Skills and knowledge required to support eco-innovation

Delivering eco-innovation implementation services will need you, as the Service Provider, to possess a variety of skills, knowledge and competencies, or at least know where and how to obtain the skills, knowledge and competencies when they are required. Many of the skills, knowledge and competencies that you will need to support eco-innovation, such as resource-efficient and cleaner product and design for sustainability, will be familiar to you and are discussed in detail in previous UNEP publications e.g. PRE-SME toolkit and D4S Manual (see the 'General references and resources' section at the end of the manual for details). The focus within this manual is on the skills, competencies and knowledge that are likely to be new to you or may require further development for the purposes of eco-innovation. Below we present a list of the main competences, skills and knowledge that will enable you to deliver successful eco-innovation implementation services:

- **Business strategy development** – The creation of a business strategy involves the definition of the long term goals for the company and the types of markets or market segments to target to achieve those goals.

- **Business model innovation** – The process of establishing a business model that supports the sustainability goals defined in the strategy whilst also focusing the efforts of the company on the key activities at the operational level.
- **Organizational change management** – Aims to guide and support the implementation of changes in organizations, such as new business processes, new structures, new cultural behaviour and mindset.
- **Marketing** – Is the set of activities that are designed to help the company to understand the type of product it should offer to a market and communicate the benefits and value of the product to the targeted consumer. Marketing focuses on the product, promotion, price and distribution channels.
- **Innovation management** – Offers management guidance that can support the implementation of innovations such as the development of new products (e.g. how to engage the customer, how to structure the development process), the introduction of new ways of working (e.g. how to introduce a sustainable procurement system), and new business models (e.g. how to transition to a product-service system).
- **Technology transfer** – SMEs often lack the resources and capacity to develop fundamental new technology but can often benefit from adopting and adapting technology developed outside of the company. A strong network of contacts covering different sectors, business and research institutes, along with good technical knowledge and appreciation of the local context are required to support this type of activity – making it an ideal role for a Service Provider. Further advice on the role of the Service Provider in supporting technology transfer is provided in the publication *Moving ahead with technologies for eco-innovation* (UNEP, In press).
- **Creative thinking** – Approaches that help to identify opportunities for innovation and novel solutions to problems by encouraging people to think about an issue in different ways and from different perspectives.
- **Design for Sustainability** – Pro-active approach to the integration of environmental, social and economic sustainability issues into the product development processes, without compromising the traditional requirements for a product, such as quality, cost and performance.
- **Life cycle thinking** – Is a mostly qualitative approach to understand how our choices influence what happens at each of the stages of the life cycle of an industrial activity: from raw material acquisition through manufacture, distribution, product use and disposal. This approach is needed in order for us to balance trade-offs and positively impact the economy, the environment, and society (UNEP, 2004).

Throughout the eco-innovation process you will need to draw on your knowledge, skills and competencies in these topics. If any of these topics are unfamiliar to you, further information can usually be found in the 'References and resources' section at the end of each section.

## 0.5.Process for eco-innovation implementation

In this section we provide an overview of the model of eco-innovation implementation which is the foundation for this manual. The main activities within each of the phases of the implementation process are presented.

There are six main phases to the eco-innovation implementation process – see Figure 0-3 for a simple overview as well as the detailed overview provided at the end of this section. These are:
*PREPARE* – is when the Service Provider identifies suitable sectors, markets and companies to target with their eco-innovation services and, having selected a company, builds a programme pitch based on their initial understanding of the sustainability challenges and opportunities facing the company.

*SET STRATEGY* – is when the Service Provider performs a preliminary assessment of how the company currently operates and then refines their understanding of the sustainability challenges and opportunities facing the company. This information is used to develop and pitch a new business strategy for the company.

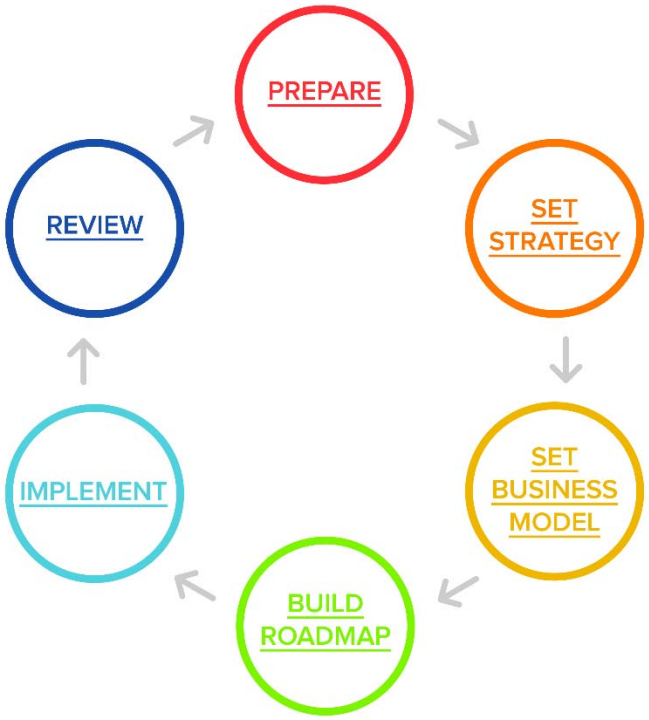



*Figure 0-3. A model of the eco-innovation implementation process.*

*SET BUSINESS MODEL* – This phase begins with a detailed assessment of the sustainability performance of the company, covering all aspects of the current business model. From here, options for new business models are generated along with a range of operational-level innovations that could support the implementation of the business model. These business model options are evaluated and the best option selected to take forward.

*BUILD ROADMAP* – Having selected a new business model, a roadmap of operational level projects that support the business model is generated. The initial steps towards implementing the business model are defined by selecting and planning the first one or two practical projects.

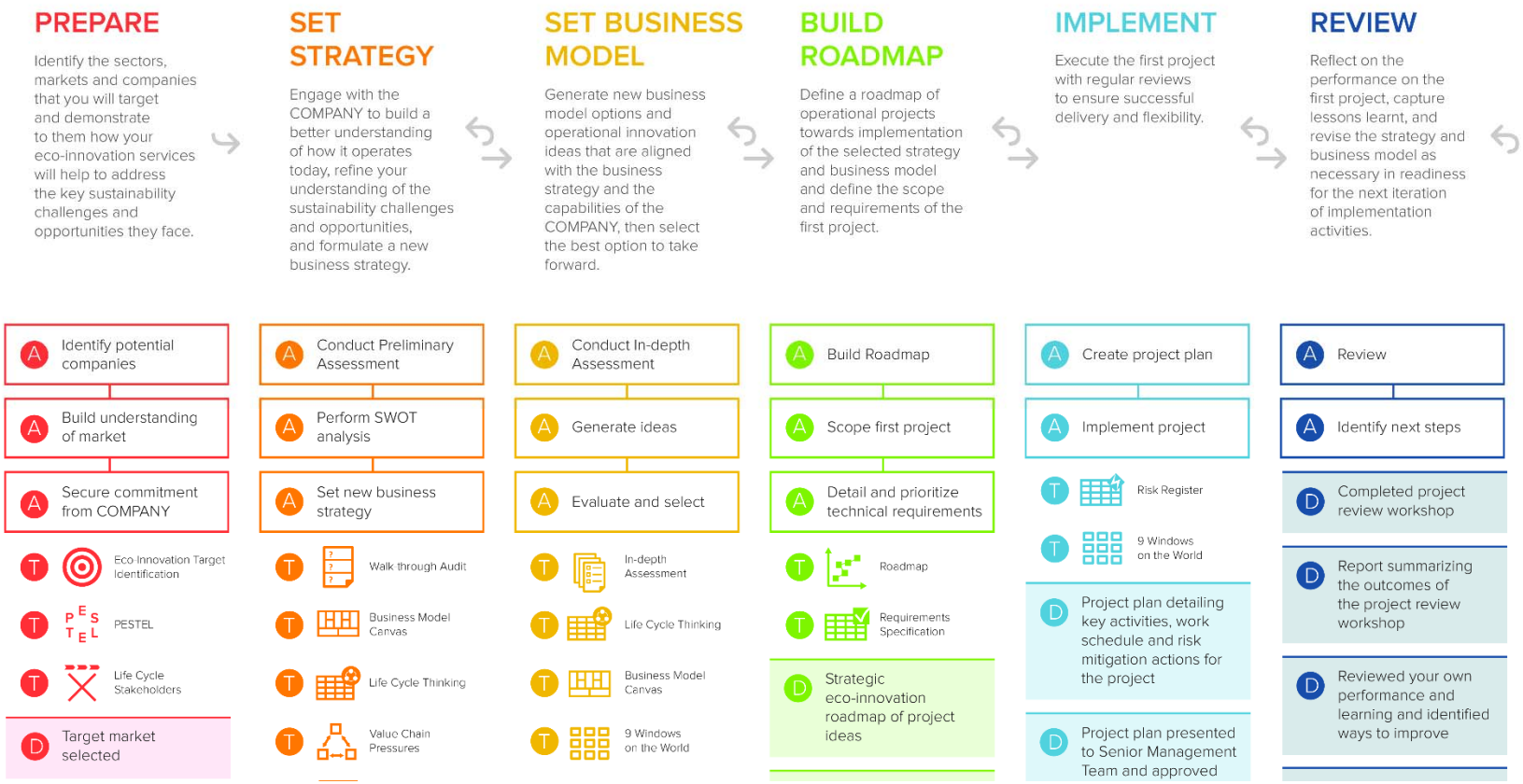
*IMPLEMENT* – Is where the initial project ideas are put into practice and delivered. Flexibility is required to adapt to issues as they arise.

*REVIEW*– The final phase of the initial implementation cycle is to review the success of the first projects and update the business strategy and business model in light of what the company has learned. Plans for the next cycle of activity are generated, encouraging wider and deeper implementation of the eco-innovation approach. It should be noted that whilst the model and the manual suggest that progress in an eco-innovation implementation programme proceeds neatly from one phase to the next, it may sometimes be necessary to revisit a previous phase in light of changes, developments and new information. This is true of any innovation process and should not be seen as a sign of failure. In fact, such setbacks will often lead to better results in the long term.

## 0.6.Checklist

| **Why eco-innovation?** | (Tick when complete) |
|---|---|
| Can you describe what eco-innovation is? | ☐ |
| Can you explain the business case for eco-innovation and why companies need to eco-innovate? | ☐ |
| Can you explain what is involved in eco-innovation for a COMPANY and the Service Provider? | ☐ |
| Can you describe the 6 main phase of the eco-innovation implementation process? | ☐ |

# THE ECO-INNOVATION IMPLEMENTATION PROCESS



- (D) Identified key sustainability threats and eco-innovation opportunities for the target market
- (D) Activity or event to raise awareness of eco-innovation and your new service within your target market
- (D) Follow-up meeting with CEO of one or more prospective companies
- (D) Presented pitch to the CEO of the COMPANY
- (D) Agreement from CEO to proceed to SET STRATEGY phase

- (T) SWOT
- (T) Force Field Analysis
- (D) Current operation of the company incl. business strategy and business model captured and understood
- (D) Sustainability hotspots along the value chain identified
- (D) Strengths, weaknesses, opportunities and threats identified
- (D) Brief report summarizing the data gathering activity and SWOT analysis
- (D) Developed a business strategy proposal for the COMPANY including long-term, strategic goals
- (D) Outline plan for a programme to support the implementation of the strategy
- (D) Presented strategy proposal and support programme pitch to CEO
- (D) Initiated actions to address important management considerations for eco-innovation implementation

- (T) People Planet Profit
- (T) Sustainable Final Result
- (T) Product Idea Prompts
- (T) Risk Register
- (T) Business Model Evaluation
- (D) Report summarizing the findings of the In-Depth Assessment
- (D) Generated a range of business model options and supporting project ideas
- (D) Completed evaluation of business model options and selected preferred business model
- (D) Senior Management agreement on the preferred business model

- (D) Scope of first project for eco-innovation agreed with Senior Management Team
- (D) Completed Requirements Specification

Team and approved

- (D) Initiated actions to support internal communication, customer feedback and project management

- (D) Reviewed the strategy, business model and roadmap and identified next steps
- (D) Presented the findings of the project review and your proposal for the next steps to the Senior Management Team
- (D) Commitment from the Senior Management Team to proceed with the next iteration of eco-innovation implementation activities

- Proceed to next phase
- Revisit this phase if deliverables are incomplete or require updating
- (A) Activities
- (T) Tools
- (D) Deliverables

# 1. PREPARE

The first phase of the process aims to prepare you to engage a company in an eco-innovation implementation programme and build the potential COMPANY's interest in the rewards available to companies that learn to eco-innovate.

## 1.1. Overview

The PREPARE phase begins by identifying a market that may be interested in your eco-innovation services. Having done this, desk research is required to help understand the main sustainability challenges faced by that market and the general opportunities for eco-innovation. This knowledge can then be used to generate interest in eco-innovation within your target market. The ultimate aim of this phase is to obtain approval from the CEO of one or more of the companies with high potential for eco-innovation to proceed to the SET STRATEGY phase.

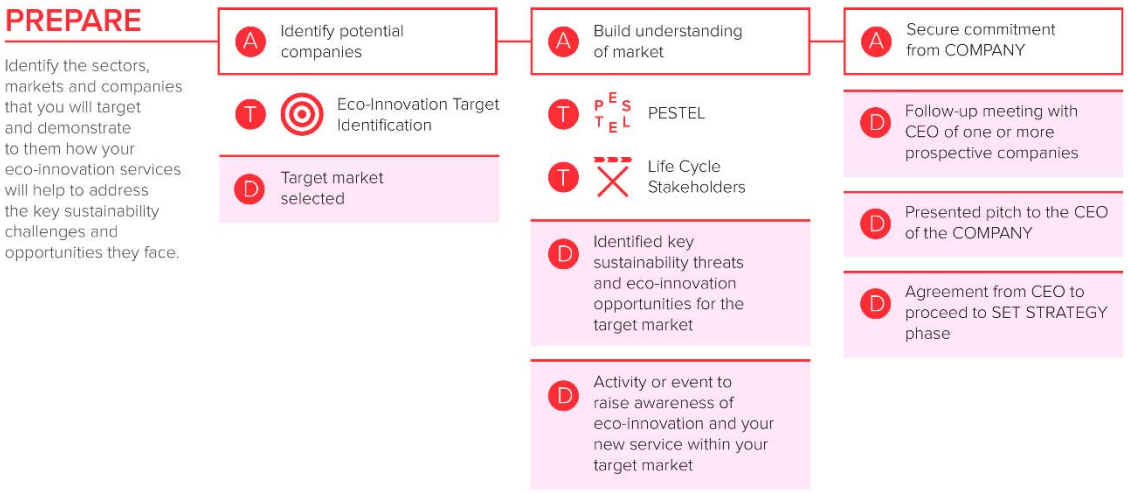



*Figure 1-1. Overview of the PREPARE phase.*

## 1.2. Identifying companies with good potential for eco-innovation

Implementing eco-innovation is a challenging process and will not be suitable for all SMEs. The likelihood of a particular company being willing and able to successfully implement eco-innovation will depend on factors such as the extent to which they are already experiencing business impacts from sustainability issues, the CEO's attitude to risk and the innovation culture of the company. An obvious place to begin looking for companies that could benefit from your eco-innovation services is the network of companies that you are already working with. The understanding you have of their business and the relationship you have built with key personnel at these companies will be highly beneficial to initiating eco-innovation activities. However, you should also consider which new markets might be interested in your eco-innovation services. The approach described below provides some advice on how to do this quickly and effectively:

1. List the main industrial sectors and markets that SMEs in your country are involved in. Include in this list the sectors that you are currently working with. You can generate your own list of sectors and markets, or try to apply standard categories such as the example shown in Figure 1-2. To complement your existing knowledge of the industry sectors and markets active in your country, you can contact your national or regional government, who should be able to provide you with additional data on this issue. If your country has a National Development Plan or a Sustainable Consumption and Production Strategy, this can provide a good source of information about national priority sectors and long term sustainability targets. Focusing on these priority sectors can make it easier to gain support and funding from government organizations.

| | |
|---|---|
| *A - Agriculture, forestry and fishing* | 01 - Crop and animal production, hunting and related service activities<br>02 - Forestry and logging<br>03 - Fishing and aquaculture |
| *B - Mining and quarrying* | 05 - Mining of coal and lignite<br>06 - Extraction of crude petroleum and natural gas<br>07 - Mining of metal ores<br>08 - Other mining and quarrying<br>09 - Mining support service activities |
| *C - Manufacturing* | 10 - Manufacture of food products<br>11 - Manufacture of beverages<br>12 - Manufacture of tobacco products<br>13 - Manufacture of textiles<br>14 - Manufacture of wearing apparel<br>15 - Manufacture of leather and related products<br>16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials<br>17 - Manufacture of paper and paper products<br>18 - Printing and reproduction of recorded media<br>19 - Manufacture of coke and refined petroleum products<br>20 - Manufacture of chemicals and chemical products<br>21 - Manufacture of basic pharmaceutical products and pharmaceutical preparations<br>22 - Manufacture of rubber and plastics products<br>23 - Manufacture of other non-metallic mineral products<br>24 - Manufacture of basic metals<br>25 - Manufacture of fabricated metal products, except machinery and equipment<br>26 - Manufacture of computer, electronic and optical products<br>27 - Manufacture of electrical equipment<br>28 - Manufacture of machinery and equipment n.e.c.<br>29 - Manufacture of motor vehicles, trailers and semi-trailers<br>30 - Manufacture of other transport equipment<br>31 - Manufacture of furniture<br>32 - Other manufacturing<br>33 - Repair and installation of machinery and equipment |

*Figure 1-2. Extract of the International Standard Industrial Classification of all Economic Activities (ISIC) rev.4 (United Nations, 2014)*

2. If at this stage your list of industry sectors and markets is long, then apply some filtering. Filters may include:
    - **Credibility and channel** - Which sectors and markets do you currently work with? Do you have existing contacts (senior management at relevant companies) in a sector or market that could support you? Or would you be starting from scratch?
    - **High direct environmental impacts** – Sectors and markets that have high direct environmental impacts are more likely to benefit from eco-innovation compared to those that have low direct environmental impacts (e.g. insurance, software etc.).
    - **Sectors prioritized by government policy** – Sectors that are considered strategically important by national government, because they are a significant source of revenue, growth and jobs for the country, are more likely to be able to access sources of funding – which is often a significant issue for eco-innovation implementation.
    - **Profitability** – sectors where margins and profitability are good are more likely to have funds available to invest in eco-innovation and your consulting services.

N.B. Remember to keep a record of the sectors and markets that you filter out at this stage. After you have gained more experience of eco-innovation, you may wish to come back to these sectors and markets to reassess the viability of offering eco-innovation services.

3. Apply the *Eco-innovation Target Identification* tool to each of the sectors and markets that you have on your shortlist. The output from this tool will be one or more target markets (and possibly some specific target companies) for your eco-innovation implementation services.

It is worth noting at this point that it is assumed throughout the manual that the COMPANY's will be Small and Medium-sized Enterprises (SMEs). Depending on the definition adopted, an SME can include companies ranging from 'start-ups' with one or two employees, 'micro enterprises' with fewer than 10 employees, 'small enterprises' with fewer than 49 employees, all the way through to well-established medium-sized companies employing up to 249 people (European Commission, 2003). This manual does not specifically focus on the particular needs of start-ups and micro enterprises, but the methodology described is applicable to these types of company with a little extra thought. Figure 1-3 highlights some of the attributes of a company that are important for eco-innovation and describes how they are likely to vary from a start-up or micro enterprise to a small or medium enterprise. Of course every company is unique and will deviate to some extent from these typical models, but they should provide a useful starting point to guide your thinking.

| Attribute | Relevance for eco-innovation | Start-up | Micro enterprise | Small or Medium enterprise |
|---|---|---|---|---|
| *Strategic inertia* (resistance to change in strategy and business model) | High strategic inertia will require more effort to initiate and implement changes in strategy and business model. | *Low* – Still learning about markets, competitors. May not yet have decided on strategy and business model. | *Low-moderate* – Likely to have strategy and business model which they can articulate but low level of maturity. | *Moderate-high* – Well-established strategy and business model which may be difficult to change. |
| *Operational inertia* (resistance to change in operations) | If the company has made large investments in production equipment or has well established ways of working it will be harder to make changes in these areas. | *Low* – unlikely to have made significant capital investments in production equipment or personnel and still working out best ways of working. | *Low-moderate* – Likely to have established particular ways of working but may not yet have made large capital investments in production equipment. | *Moderate-high* – Likely to have significant capital investments in current technology, personnel etc. |
| *Attitude to risk and risk management* | Eco-innovation, like any innovation activity, will involve some risk. The company must be willing to take calculated risks and capable of managing those risks. | *Willing to take risks* – Entrepreneurs are typically willing to take risks but lack of resources and systems for formal risk analysis and management can result in failure. | *Moderately risk averse* – Having survived the start-up phase, micro enterprises will probably have experienced some tough periods and so begin to become more risk aware and sensitive to risk taking. | *Increasingly risk averse* – Typically, companies become more risk averse as they grow larger. However, well established companies will tend to have better systems in place for managing risk. |
| *Innovation resources* | The greater the quantity of financial, technical and human resources available for innovation the easier it will be to initiate eco-innovation activities. | *Limited* – very few staff and narrow range of expertise, very limited financial resources. | *Limited-moderate* – Few staff and narrow range of expertise but may have better access to finance if the company has a stable financial track record. | *Moderate* – Larger number of staff may include wider range of expertise and more likely to be able to access additional financial resources from investors of government schemes. |
| *Decision making style* | Senior management within the company will be required to make important decisions at every step of the eco-innovation process. | *Rapid and responsive* – Everything is decided by company founders so decisions are made quickly. | *Efficient* – Without multiple layers of management, decisions can still be taken efficiently but may require more time for consideration than in a start-up. | *Becoming bureaucratic* – May have formalized decision-making procedures and bodies such as a Board of Directors. Such procedures will tend to slow down the decision-making process. |

*Figure 1-3. How the characteristics of start-ups and micro enterprises impacts on eco-innovation activities.*

Having identified a target market, the next step is to build a better understanding of your target market, which is described in the following section.

## 1.3.Building a better understanding of your local context and target market

In the previous section you should have applied the *Eco-innovation Target Identification* tool to help select a target market for your new eco-innovation services. Now you need to enhance your knowledge of this market in order to create a credible and compelling marketing message that you can pitch to relevant companies.

The objectives here are to, first, understand the main challenges and threats faced by the market and the general opportunities that exist for eco-innovation. Secondly, to identify relevant stakeholders that could help to address the opportunities and threats identified and therefore help you to build a stronger pitch to a relevant company.

Tools and information to help you with these tasks are introduced in the following sub-sections and in Section 1.3.4 this approach is applied to a case study company.

### 1.3.1. Identifying opportunities and challenges across the product life cycle

Identifying opportunities and challenges for a particular market requires you to gather and analyse data concerning the life cycle of the products of that market and the contextual factors that may be influencing the market.

Developing a better understanding of life cycle of a market's products can be achieved through 'Life Cycle Thinking'. Life Cycle Thinking is a mostly qualitative approach to understand how our choices influence what happens at each of the stages of the life cycle of a product or service: from raw material acquisition through manufacture, distribution, product use and disposal. This approach is needed in order for us to balance trade-offs and positively impact the economy, the environment, and society (UNEP, 2004).

Applying this approach to the search for sustainability opportunities and challenges involves a systematic consideration of each stage of the product life cycle, from raw material extraction through to disposal, and thinking about the environmental, social and economic benefits and impacts of the product.

To guide your search for opportunities and challenges across the product life cycle, try to answer the following questions:

- Where and when are the most significant costs incurred across the life cycle of the product?
- What are the most significant resources (energy, materials and water) consumed throughout the product life cycle?
- Where are resources being wasted or underutilized?
- Where are there toxic chemicals used and how are they prevented from impacting the environment or human health?
- How does the product value chain impact on local stakeholders?
- Which stakeholders benefit from the product, and which are negatively impacted?
- How could greater value be derived from the product life cycle?

The other aspect of searching for opportunities and challenges is to think about the context in which the market operates. The aim is to develop a broad understanding of the factors that may have an influence on the market.

To guide your search for opportunities and challenges in relation to the contextual factors of the market, try to answer the following questions:

- How is the competitive landscape changing? Who is winning and why?
- How is the market changing in terms of demographics, attitudes etc.?
- What new technology is emerging in this market? Or in related markets?
- What is the 'industry buzz'? What are people in the market talking about and wanting?
- What is the 'social buzz'? What social issues are large companies reporting on? What social sustainability issues are trending on social media platforms?
- How is environmental legislation or government policy supporting (or hindering) eco-innovation in your country?
- What voluntary standards are being implemented by leading companies in the industry?
- Has there been a recent disruption to the supply chain of an industry (through industrial action, geo-political events, failure of a key supplier etc.)?

If you want to adopt a more structured approach to your search, you can apply the *PESTEL* framework, which is often used by a company to scan their environment for emerging issues that may influence their success and strategy. Applying *PESTEL* involves searching the external environment of the company for significant issues or trends related to the following headings: political, economic, social, technological, environmental and legal. A template and further details the *PESTEL* tool is provided in the *Tool Instructions* document.

Finally, a sophisticated, but time intensive, approach to identifying market opportunities is regional lead-lag analysis. This attempts to forecast what will happen in your target market based on what is happening in a 'lead market' (a market which shows similar patterns of development as the target market, but tends to see these patterns emerge earlier). For example, if Slovakia develops a new, more energy efficient steel surface-finishing technology, it is likely that the Ukraine and other steel-producing countries in the region will soon adopt the same technology (and vice-versa).

### 1.3.2. Sources of data and information

Answering the questions outlined above will require a variety of sources of data, including qualitative and quantitative data from formal and informal sources. Below are some suggestions for where to look for the information you need, starting with sources of qualitative data.

- **Professional networking websites** – sites with discussion forums such as LinkedIn can offer some useful insights into the industry and social buzz and the types of challenges that industry professionals are concerned about. With most sites offering membership at no cost, this can be a good place to start your research.
- **Government websites** – these should provide details of current and forthcoming policy and legislation. Try to keep up to date with developments in legislation as well as priority areas and themes for government funding. Where possible, try to develop contacts within relevant parts of the government so that you are the first to know of new developments that may be relevant for your target market.
- **Conferences and seminars** – if relevant events are happening in your area, it can be worth attending, both to hear about the types of challenges and opportunities being discussed and to

make new contacts. Attending a conference can represent a significant investment in terms of both time and cost, so try to research the event before committing to attend. For example, is the event organized by a reputable organization? Are there any companies that you would like to meet speaking or attending the event? Can you get more information about the delegates from the event organizer? How many people attending? What are their job titles? etc.

- **Informal events** – is there somewhere where you can meet relevant people from your target market on an informal basis. For example, is there a 'Green Drinks' initiative in your area (http://www.greendrinks.org/)? If not, could you start one?
- **Trade publications** – many industries have trade publications that provide information on the latest developments in research and development as well as articles on significant challenges for the industry.
- **Technology blogs and open innovation platforms** – Blogs focused on technology for developing and transitional economies such as the World Bank blog (http://blogs.worldbank.org/ - search for relevant tags such as 'Environment', 'Climate change', 'Social development' etc.) can provide useful information on technologies being applied in other markets around the world which might be transferrable to your country. Open innovation platforms, such as Yet2 (http://www.yet2.com/), are places where companies can provide details of technical problems they are trying to solve as well as novel technologies they have developed which are yet to find an application.
- **Corporate Social Responsibility (CSR) reports** – Many large companies now produce an annual CSR report in accordance with standards and schemes such as the Global Reporting Initiative (GRI). The GRI database (http://database.globalreporting.org/) contains over 15,000 reports and can be searched by sector. Part of the reporting process is to determine, using a systematic approach incorporating feedback from stakeholders, which sustainability issues are 'material' (important) for the company. These reports therefore represent many person-years' worth of research into the key sustainability challenges and opportunities facing the industries they represent.
- **Technical patents** – the advent of online, searchable patent database has made it much easier to find relevant patents. Free to access databases, such as Espacenet (http://www.epo.org/searching/free/espacenet.html) which includes over 80 million patents and patent applications, can be used to find solutions to existing problems or to monitor the research and development activities of companies that you are interested in. If patent office in your country does not have an online patent database, you can always look at patents from relevant companies in other markets to get an understanding of trends and developments that might be useful for companies in your target market.
- **National government departments for trade and industry, Trade associations, SME associations and Chambers of commerce** – each of these can be interesting sources of data, although the variety and quality of data will vary significantly from one organization to the next.
- **Academic and private research centres** – from the websites, email newsletters and publications of research centres you should be able establish if there are research groups working on issues that may be relevant to your eco-innovation services. If so, you may wish to build links with key personnel at those centres so that both sides have an understanding of the others interests and competencies, which will facilitate future collaborations.

Quantitative data on markets and trends can be found in a variety of places. Sources include:

- **International Trade Centre (ITC)** – general data on international trade.
  Available from: http://www.intracen.org/
  **World Trade Organization (WTO)** – general data on international trade and market trends, including interactive trade maps.
  Available from: http://www.wto.org/english/res_e/statis_e/statis_e.htm

- **UN Comtrade Database** – general data on international trade.
  Available from: http://comtrade.un.org/
- **Centre for the Promotion of Imports from developing countries (CBI)** – data on EU markets and trading with partners within the EU.
  Available from: http://www.cbi.eu/marketintel_platform
- **Food and Agriculture Organization of the United Nations** – data on global food prices and sustainability challenges being faced by the agri-food sector.
  Available from: http://www.fao.org/
- **COLEACP** – information on sustainable horticulture.
  Available from: http://www.coleacp.org/en
- **National government departments for trade and industry**.
- **Trade associations**.
- **Chambers of commerce and/or industry**.

### 1.3.3. Building partnerships

As you begin to develop a better understanding of your target market you may also begin to come across organizations that could help to address some of the specific opportunities and challenges you have identified. Making initial contact with relevant organizations at this stage may help to build a stronger pitch to a company or provide useful contacts within your target market. To help you identify relevant organizations and think about how they could contribute to eco-innovation activities you can apply the *Life Cycle Stakeholders* tool, which is described in Section 1.7.

As well as organizations that are specific to your target market, you should also think about more general partnerships that could help you to build a more complete service offering or provide access to a wider range of companies. The types of organizations that might provide this type of general support and partnership in your eco-innovation activities include:

- **Innovation hubs/National Cleaner Production Centres** – If you are based within an NCPC then your organization may benefit from partnering with an innovation hub, which will have experience of supporting companies through strategy and business model innovation. Conversely, if you are based within an innovation hub, then your organization may benefit from partnering with an NCPC who have significant technical expertise and an extensive knowledge of sustainability issues.
- **Local development agency** – A development agency in your region may be able to identify and help you apply for regional, national or international sources of funding to get your eco-innovation services started.
- **Trade promotion organizations** – Many national governments have a trade promotion agency. These can be a useful source of export and trade data to help you identify the major export sectors of your country and the companies involved in those sectors.
- **Ministry for commerce or industry** – These organizations can often provide support for small and medium enterprises providing help such as business mentoring and access to finance.
- **Possible financiers** – Local banks, investment angels and other sources of finance should be approached if there is a strong likelihood that funding will be required at some point in the programme. These organizations may need to be educated on what eco-innovation is and what the long term benefits for the company will be. An important point to keep in mind when preparing a

pitch for funding is to focus on the key issues and metrics from the investors perspective e.g. return on investment, payback period, risk management and suchlike.

- **Research institutes** – Having access to research and development facilities and relevant technical know-how can be crucial to the success of projects involving some amount of technology development. Small and medium sized companies will almost certainly not have their own facilities and so they will need to gain access to these facilities elsewhere. Universities and research centres are often willing to provide free or low cost access to their facilities and staff in return for permission to use the research data or case study information in research, teaching or marketing.

Further guidance on how to engage stakeholders and initiate partnerships is provided in Section 3.5.8 and also in the references in Section 1.8.

### 1.3.4. Case study introduction

Throughout this manual a hypothetical case study company is used to help explain the process of implementing eco-innovation. The box below provides a brief description of the case study company, 'Tasty Tuna Company' – further detail is provided in the case study description document in the training material.

***Description of the Tasty Tuna Company*** Case study

Tasty Tuna is a small, family-run company that specializes in the processing and canning of tuna fish products. The company was created by a fishing family in 2004 because they were unhappy with the price they were receiving for their fish. The family still own and manage the company, which now employs 40 people and processes 1000 metric tonnes of tuna per year.

The company buys its fish direct from the fishermen at the local market. The fish is taken and processed using predominantly manual processes. The canned tuna is finished with Tasty Tuna branded packaging when sold into the domestic market, but the company also offers customized packaging for large international customers.

The company has two products:

*Premium, Yellowfin canned tuna in oil* – mainly sold to the export market
*Standard, Skipjack canned tuna in brine* – mainly sold in the domestic market.

The majority of the company's employees are involved on the production line but there are five office staff consisting of the CEO, the Production Manager, the Sales Managers, one Buyer and one Finance Assistant.

Below is an example of the types of challenges and opportunities a small tuna processor, like the Tasty Tuna Company, might be facing. The challenges are categorized as environmental, social or economic challenges.

**Environmental challenges for tuna processors:**

- Concerns about overfishing and the impact of by-catch on the marine eco-system associated with purse seine (extremely large nets that can be drawn closed at the bottom) and long line fishing methods used by some of the company's suppliers.
- Significant energy use during cooking and can sterilization process.

- Emission of contaminated water from the production processes.
- Disposal of fish waste from the processing operations.
- Quality of the fish supplied and subsequent impact on waste generation rates, such as average weight per fish.
- Transport logistics of supply from market to factory, in terms of traffic/routes and refrigeration, and impacts on noise emissions from the site.

**Social challenges for tuna processors:**

- Reports of slavery-like conditions on board large tuna fishing vessels.
- Increasing concerns about the health impacts for consumers due to the leaching of chemicals from tin cans (e.g. bisphenol-A from the can lining).
- Demands from large international customers that the company adopt the SA 8000 social accountability standard.
- Concerns about sustainability of fish stocks on the part of consumers.

**Economic challenges for tuna processors:**

- Demands from fishermen to offer better prices for their tuna catch, despite prices already reaching an historical high.
- Competition from other tuna processors in the region for labour and raw materials.
- International fishing companies obtaining licenses to fish in the region (who do not process their catch in the region where it is caught).
- High energy costs for production processes.
- Lack of integrated supply chain, as company does not own fishing fleet or have fixed contracts with fishermen.
- Competition for labour from other industries or other companies in the same industry
- Incentives or support that are given to similar industries in other countries or regions, which gives them an advantage.
- Competition from tuna producers in other regions, and other sources of protein such as meats (e.g. chicken, pork) and vegetable (e.g. soy).

**Market opportunities for tuna processors**

Below are some examples of opportunities for tuna processors:

- Address markets willing to pay a premium for a more sustainable product by offering pole and line caught fish.
- Diversify into the processing and canning of other types of fish and seafood or vegetables.
- Gain marketing benefits by switching to organic lacquers for coating tins instead of plastic coatings (which have been linked to chemical leaching problems).
- Switch to alternative packaging materials, such as plastic/foil pouches, which can offer significant weight and transportation fuel savings.
- Significant fish loss and waste between point of catch and point of consumption e.g. opportunity to use by-catch and fish off-cuts to produce animal feeds.

## 1.4.Generating interest within companies

Having completed the desk research, you should now be in a position to begin engaging companies in the markets that you have identified as good prospects for eco-innovation. This can be done in many ways. You should consider targeting relevant government agencies, trade associations and the like who may be able to provide some core funding to help you engage with individual companies within your chosen sectors and markets. Whichever approach you chose the ultimate aim is to generate sufficient interest in eco-innovation amongst your target companies to win approval from the CEO to proceed to the next phase, which aims to review a company's business strategy (the SET STRATEGY phase).

Ways of generating interest could include:

- Present an overview of eco-innovation services when visiting companies that you work with already that fall within your target markets for eco-innovation.
- Contact the relevant trade or industrial association or Chambers of Commerce for your target market to discuss the opportunities to run joint events and co-promotion on the topic of eco-innovation. They are often keen to find new ways of supporting their members and offering new services.
- Initiate a project to address a sector-wide challenge or opportunity. If funding for the project can be secured, this can facilitate the recruitment of industrial partners to provide further investment.
- Make use of the partnerships you have developed. If you have developed partnerships then think about what new contacts they may be able to provide. Also, how could you work together with your partners to build greater reach and impact for your marketing events?
- Organize a seminar and invite representatives from your target market. If you have not yet done so, use Section C of the *Eco-innovation Target Identification* tool to help you identify good companies to approach within your target market.
- Develop a market-specific presentation about the drivers and opportunities for eco-innovation within that sector and then contact individual companies from within that target sector to arrange a meeting to deliver this presentation.
- Contact the customers and stakeholders of a company and ask them how they rate the sustainability performance of the company. If you identify an area where the company is failing to live up to stakeholder expectations this can be useful information for the company.
- Publish a White Paper on the business benefits of eco-innovation targeted at your target market. A White Paper is a piece of marketing literature, typically around 4 to 5 pages in length, which describes a new approach or new product that can help to solve a business problem. When writing a White Paper, it is important to clearly identify the audience for the White Paper and provide suitable content and language for your target audience (i.e. if your intended audience is the CEO of the company the focus should be on the business benefits, capital costs etc. not the technical detail of a solution). Try to include pictures, diagrams and examples where possible to help explain and reinforce the points you are making. Some relevant content can be found in the 'Business case for eco-innovation' published by UNEP, but try to complement this with examples and arguments that are more specific to your region, country and target market. Once complete, putting your White Paper on your web page where people can download it for free in return for providing their contact details is a good way to generate leads. You can also try sending an email to existing contacts to let

them know about your new eco-innovation services, including a link to the White Paper download page on your website.

- Make it fun. If you can incorporate some interactive game or competitive elements into you early stage interactions with a company it can prove a lot more engaging and enticing than standard approaches based on long presentations.

Clearly, there are many other ways of generating interest in eco-innovation within your target market and your understanding of the market will help to determine the most appropriate and effective option. Whichever approach you chose, the ultimate aim is to secure a meeting with the CEO in order to discuss the next steps and gain approval to proceed to the SET STRATEGY phase.

## 1.5.Gaining approval to proceed

Throughout the programme there are key points in the process where you will need to outline the arguments supporting investment from the company in implementing eco-innovation and decide how to proceed. The first of these key points is gaining approval from the CEO of at least one of your target companies to get internal access to the company.

Before you meet with the CEO you will need to decide whether to present a pitch for funding of a full eco-innovation implementation programme or will simply be requesting permission to get internal access to the company so that you can proceed through the activities of the SET STRATEGY phase (which may or may not be funded depending on the approach you decide to adopt). If you do decide to present a pitch for funding of a full eco-innovation implementation programme, Section 2.4 provides some relevant advice.

For the purpose of this manual it is assumed that at this stage you are requesting permission to get internal access to the company so that you can proceed through the activities of the SET STRATEGY phase. Below is a suggestion for the topics to include in your pitch to the CEO.

***Key points for your pitch to the CEO***


- Brief introduction to your organization and the services it provides.
- Describe what eco-innovation is.
- Discuss the potential business benefits of eco-innovation. The UNEP 'Business Case for Eco-innovation' has identified a range of business benefits that eco-innovators can realize – see Section 0.2 for details.
- Give examples of how eco-innovation has benefitted other companies. Case studies can be found in the 'Business Case for Eco-innovation' report, but local/national/regional examples or examples from the same industry in other countries and your own experience are always preferable.
- Emphasize that implementing eco-innovation is a long-term, strategic initiative that will require the on-going support and commitment of the Senior Management Team if it is to be successful.
- If relevant, mention the partnerships you have formed with stakeholders that will ensure that you have access to the skills, knowledge and resources required to deliver a comprehensive eco-innovation implementation service.

When requesting permission to proceed there are a number of key questions that you should try to address to help the CEO make a decision (with some generic answers):

- **How will proceeding to the next stage benefit the company?** – A business strategy will be formulated describing the types of market that the company could operate in, the competitive strategy it could employ and some long-term goals. This strategy can be used to guide future eco-innovation activities.
- **What will you do?** – Conduct a Preliminary assessment of the company to identify specific opportunities for eco-innovation across the life cycle of its products. This will involve reviewing their existing business strategy and conducting a workshop with company personnel to identify challenges and opportunities where eco-innovation could provide a relevant solution. Based on the information gathered a new and revised business strategy that incorporates eco-innovation will be proposed for the company.
- **What will be the outcomes and deliverables?** – A report that summarizes the findings from the strategy review and workshop and goes on to propose a new business strategy for the company. In a subsequent meeting, the Service Provider will return to present the findings from the report and to promote a programme to support the implementation of the strategy throughout the company.
- **What involvement from senior management and other personnel will be required?** - 1.5 hours with the CEO to review the current business strategy, 1 day workshop with key personnel from across the company to help identify challenges and opportunities. After the completion of the report a 1 hour meeting with the Senior Management Team will be arranged to present the findings and a pitch for the implementation programme.
- **Will you require funding from the company?** – No, not at this stage*.

* Clearly, if you believe that the company will derive significant value from the work you do during the SET STRATEGY phase then it will be preferable to charge for this as a service in its own right. If not, the time you spend on these activities will form part of your sales and marketing overhead.

The answers to these questions will be highly dependent on the context (type of company, existing relationship, your preferred ways of working etc.), but further detail of how to organize and manage the activities of the SET STRATEGY phase will be presented in the following section. This knowledge will help you to prepare for this initial meeting with the CEO.


*It is important that you meet with the CEO of the company at this stage (and not other members of staff, even if they are part of the Senior Management Team) to ensure that there is interest and engagement from the very top of the company. If the CEO is not willing to meet with you, then it may be a sign that the company is not yet ready for eco-innovation.*

## 1.6. Checklist

| **PREPARE phase** | (Tick when complete) |
|---|---|
| Have you conducted background research to help select a target market for your eco-innovation services? | ☐ |
| Have you completed the Eco-innovation Target Identification tool? | ☐ |
| Have you selected a target market for your eco-innovation services and a target cluster of companies within that market? | ☐ |
| Have you identified the key sustainability threats and eco-innovation opportunities for the target market and companies? | ☐ |
| Have you completed an activity or event to raise awareness of eco-innovation and your new services within your target market? | ☐ |
| Have you held a follow-up meeting with the CEO of one or more relevant companies? | ☐ |
| Have you presented a pitch to the CEO of your target company that describes the business benefits and sought permission to proceed to the SET STRATEGY phase? | ☐ |
| Do you have agreement from the CEO of the COMPANY to proceed to the SET STRATEGY phase? | ☐ |

## 1.7.Supporting tools

The following tools are relevant for this section of the manual. Details of how to apply the tools and templates are provided in the *Tool Instructions* document.

*Eco-innovation Target Identification*

**Description:** A template that is designed to support you in identifying companies that are more likely to be willing and able to benefit from eco-innovation services. The template provides questions to guide your research analysis, starting at the industry sector level, before progressing through the market level, down to specific companies.

**Who?:** This tool is intended for use by the Service Provider.

**When?:** At the start of the PREPARE phase.

**Inputs:** List of the main industrial sectors and markets that SMEs in your country are involved in. Basic information about the characteristics of the main industry sectors, markets and companies operate in your country.

**Outputs:** A prioritized list of companies to target as prospects for eco-innovation implementation services.

*PESTEL*

**Description:** Provides a simple framework to guide and structure your search for factors that may have an impact on the success and strategy of companies within a particular market.

**Who?:** This tool is intended for use by the Service Provider.

**When?:** During the PREPARE phase.

**Inputs:** A market for which you want to discover the key opportunities and challenges.

**Outputs:** Guidance on important areas to investigate for factors that may have an impact on the success and strategy of companies within a particular market. This can be used to create a structured list of challenges and opportunities for the market and can later be used again as a data source for the SWOT analysis.

*Life Cycle Stakeholders*

**Description:** Used to help you identify all key stakeholders for the COMPANY and think about how they could contribute to eco-innovation activities.

**Who?:** This tool is intended for use by the Service Provider.

**When?:** During the PREPARE phase.

**Inputs:** List of stakeholders for the COMPANY.

**Outputs:** Suggestions for how stakeholders can contribute to the eco-innovation activities. This can be used to strengthen your pitch to relevant companies and can be used again when generating innovation ideas during the SET BUSINESS MODEL phase.

## 1.8.References and resources

Industry classification and definition of SME:


United Nations International Standard Industrial Classification of all Economic Activities (ISIC) rev.4. Available from: https://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27&Lg=1

European Commission Recommendation 2003/361/EC concerning the definition of micro, small and medium-sized enterprises. Available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:124:0036:0041:en:PDF


Sources of market analysis data:


International Trade Centre (ITC). General data on international trade.
Available from: http://www.intracen.org/

CBI (Centre for the Promotion of Imports from developing countries). Data on EU markets and trading with partners within the EU.
Available from: http://www.cbi.eu/marketintel_platform

Food and Agriculture Organization of the United Nations. Data on global food prices and sustainability challenges being faced by the agri-food sector.
Available from: http://www.fao.org/home/en/
COLEACP. Information on sustainable horticulture.
Available from: http://www.coleacp.org/en

Trade promotion organizations:

Asian Trade Promotion Forum. Gathering of 24 trade promotion organizations from across Asia.
Available from: http://www.atpf.org/index.html

Online patent databases:

Espacenet. Covers over 80 million patents and patent applications from around the world.
Available from: http://www.epo.org/searching/free/espacenet.html

South African Online Patent Search. Free access to patents filed in South Africa.
Available from: http://patentsearch.cipc.co.za

China Patent Information Center. Free access to patents filed in the People's Republic of China.
Available from: http://search.cnpat.com.cn/CPRS2010/cnSimpleSearchEn.html

Writing a White Paper:

WhitePaperSource. Website featuring articles on how to write a White Paper, a forum, and downloadable audio classes.
Available from: http://www.whitepapersource.com/

Examples of White Papers available from: http://www.thatwhitepaperguy.com/that-white-paper-guy-samples.html

Example of an eco-design White Paper available from:
http://www.grantadesign.com/eco/ecodesign.htm

Stakeholder engagement and partnership initiation:

AccountAbility, United Nations Environment Programme, Stakeholder Research Associates Canada Inc (2005). The stakeholder engagement manual. Volume 2: The practitioner's handbook on stakeholder engagement.
Available from: http://www.unep.fr/shared/publications/pdf/WEBx0115xPA-SEhandbookEN.pdf

# 2. SET STRATEGY

The aim of the SET STRATEGY phase is to use your knowledge of the company's strengths, weaknesses, opportunities and threats to propose a new business strategy that places eco-innovation at the core of the company's business strategy to ensure progress towards a sustainable future for the company.

## 2.1.Overview

In the PREPARE phase you identified some generic opportunities and challenges for companies in your target market. Now that you have internal access to the company the aim is to build on this information to identify the specific opportunities and threats that are most relevant for the COMPANY. These data are gathered through a Preliminary Assessment, which aims to capture the current business strategy, business model and operational performance and identify some of the main opportunities and threats facing the company. This information can then be used to propose a business strategy for the COMPANY. The ultimate aim of this phase is to be able to present a proposal to the COMPANY which describes a new business strategy and an eco-innovation implementation programme that you will deliver to it to support the roll-out of eco-innovation.

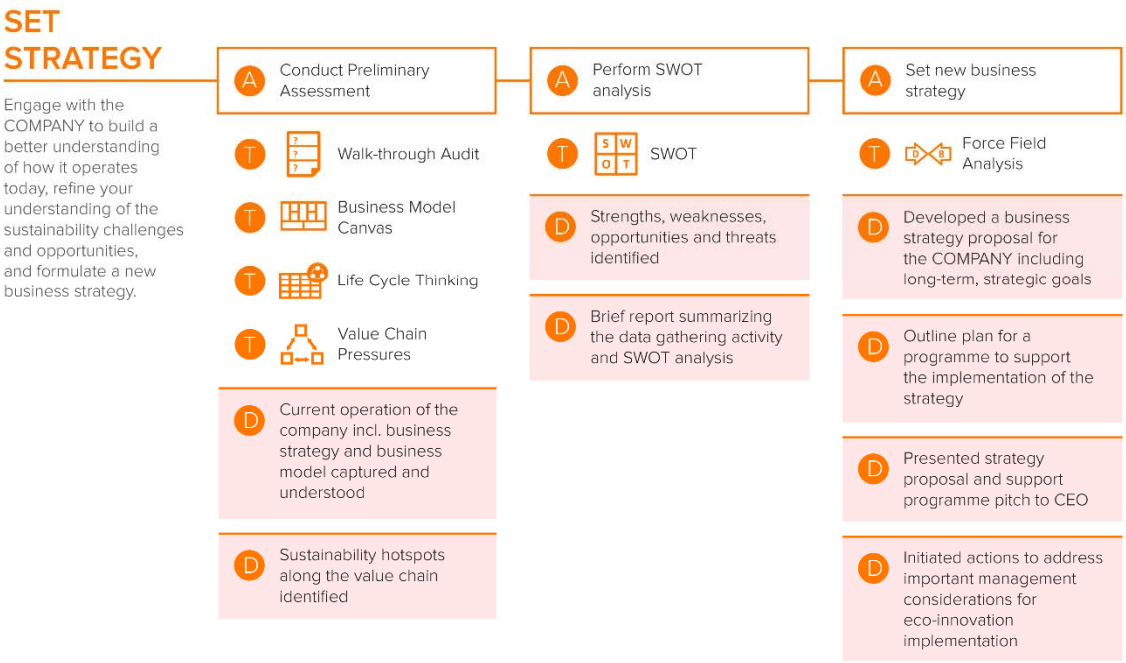



*Figure 2-1. Overview of the SET STRATEGY phase.*

## 2.2.Preliminary assessment

In order to propose a suitable new business strategy for the company you will need to gather information about some of the key aspects of the company. In particular, you will need to understand the current business strategy, business model and operational performance of the company as well as the opportunities and challenges faced by the company.

Given that you may not yet be receiving any funding from the COMPANY, this activity should aim to deliver an insightful and thought-provoking report for the COMPANY whilst keeping the time you spend on report to less than 1-2 days. It may be worth explaining to the COMPANY before you begin that the aim of the Preliminary Assessment is to capture the situation today and identify the key opportunities and threats facing the company but that it will not provide a detailed, quantitative assessment of those opportunities. This should help to set reasonable expectations for the outcomes of the assessment. This section provides guidance on the types of information to focus on and suggests ways to help you gather that information.

### 2.2.1. Focal Point

During the SET STRATEGY phase you will need to gather lots of information about the COMPANY and may need to arrange meetings and workshops with key personnel from the company. To help facilitate these activities you should ask the CEO to appoint a 'Focal Point' to assist you. This person will act as your main contact within the company. The Focal Point should ideally have a broad and deep knowledge of the company in order to be able to answer your questions or point you towards the best person within the company to speak to about a specific topic; although you may find that a more junior employee is appointed to help you. Having a Focal Point in place will be useful throughout the rest of your eco-innovation implementation activities but it may be that the person who performs this role will need to change at certain points, particularly once the first project to work on has been selected.

### 2.2.2. Capturing the current business strategy

It is useful to learn about the current business strategy in order to have a better understanding of the context in which the strategic change will need to take place. The current business strategy will likely also reveal some useful insights into how the company views itself and its position in the world.

Whilst there are many different definitions and perspectives of what 'business strategy' is, the definition applied in this manual is:

> *Business strategy describes the long term goals of the company and the markets in which the company will operate (i.e. vision and mission) (adapted from Andrews, 1997).*

From this definition it is clear that the two key pieces of information that a description of a company's strategy should provide are:

- A set of long term goals for the company.
- A definition of the types of markets the company should operate in.

The current business strategy of the Tasty Tuna Company is described in the panel below (further information is provided in the *Case Study Description* document).

Case study

***Current business strategy of the Tasty Tuna Company***

*Strategic goals*

1. To remain the number one canned tuna producer in the domestic market.
2. To increase product sales to over $1 million within 3 years (sales last year were $680,000).

*Key markets*

1. Domestic business-to-business food retail market segments worth at least US$ 100,000
2. Export business-to-business food wholesale market segments worth at least US$ 200,000.

In some companies the business strategy will be formally captured in a presentation or some kind of document e.g. a 'five-year plan'. If such a presentation or document exists, this should provide you with the majority of information that you need.

However in many companies the strategy will not have been captured formally and may simply reside in the mind of the CEO. If this is the case, you will need to interview the owner/CEO to discover more about the strategy. Here are some questions that can be used during such an interview:

1. What are your main markets?
2. How did you select those markets?
3. What are the most valuable outcomes your company enables for your customers?
4. Why would customers choose your products/services over those of a competitor?
5. What is it that your company does that is difficult for your competitors to replicate?
6. What strategic goals do you have, if any?
7. What are the major forces driving changes in your business?
8. What are your options for growing your business in the future?


*During your interview you should also be trying to build an understanding of beliefs and attitude of the CEO e.g. Do they have a personal interest in sustainability issues? What is their attitude to innovation and risk? Are they looking for quick fixes or do they want to invest in long term, fundamental changes?*

In Section 1.3 you may have used the *PESTEL* tool to help guide your desk research into the generic opportunities and threats being faced by companies in your target market. It can be useful to present these generic opportunities and threats and discuss them with the CEO, asking questions such as:

- Is this threat/opportunity relevant to you?
- If so, how important is it and what are you doing about it?
- If not, why not?
- What other threats and opportunities do you see for the company?

This type of questioning should help you to either validate or reject the opportunities and threats previously identified and begin to uncover some new ones.

After the interview, try to write up your notes to provide a short summary of the company strategy. You may wish to send a copy of your notes to the CEO to check that you have understood them correctly. Section 2.3 provides an example of a business strategy for the Tasty Tuna Company.

### 2.2.3. Capturing the current business model

The term 'business model' is often interpreted in different ways. In this manual, the following definition is used:

> *A business model describes how a company does business. It is the translation of strategic issues, such as strategic positioning and strategic goals into a conceptual model that explicitly states how the business functions. The business model serves as a building plan that allows designing and realizing the business structure and systems that constitute the company's operational and physical form* (Osterwalder et al., 2005).

Capturing the main details of the COMPANY's business model can be aided by using the Business Model Canvas (Osterwalder & Pigneur, 2010), which has quickly become a popular framework for describing a business model. The value of the Business Model Canvas is that it allows you to capture the essential elements of a business model on one sheet of paper in a way that is logical and easy to explain and discuss with others. These traits make it very useful for supporting business model innovation, a topic that is discussed further in Section 3.2.

The COMPANY's business model can be captured by completing a business model canvas template (see references for download location). This can be done with the CEO of the company or with a couple of senior staff members, such as the Marketing Manager and the Production Manager, who, together, will have a good overview of the company. An introduction to the Business Model Canvas is provided below.

**What is the Business Model Canvas?**

The canvas consists of nine building blocks, each of which represents a key element of the business model. All nine blocks of the canvas must be populated to describe a complete business model, although the relative importance of each block will vary according to the business model. Each block has a title that specifies the aspect of the business model that should be described by the user in that block. Figure 2-2 shows the basic business model canvas, with numbers added to show the order in which they are explained in the text below (with definitions of each block provided by Osterwalder & Pigneur in italic font).

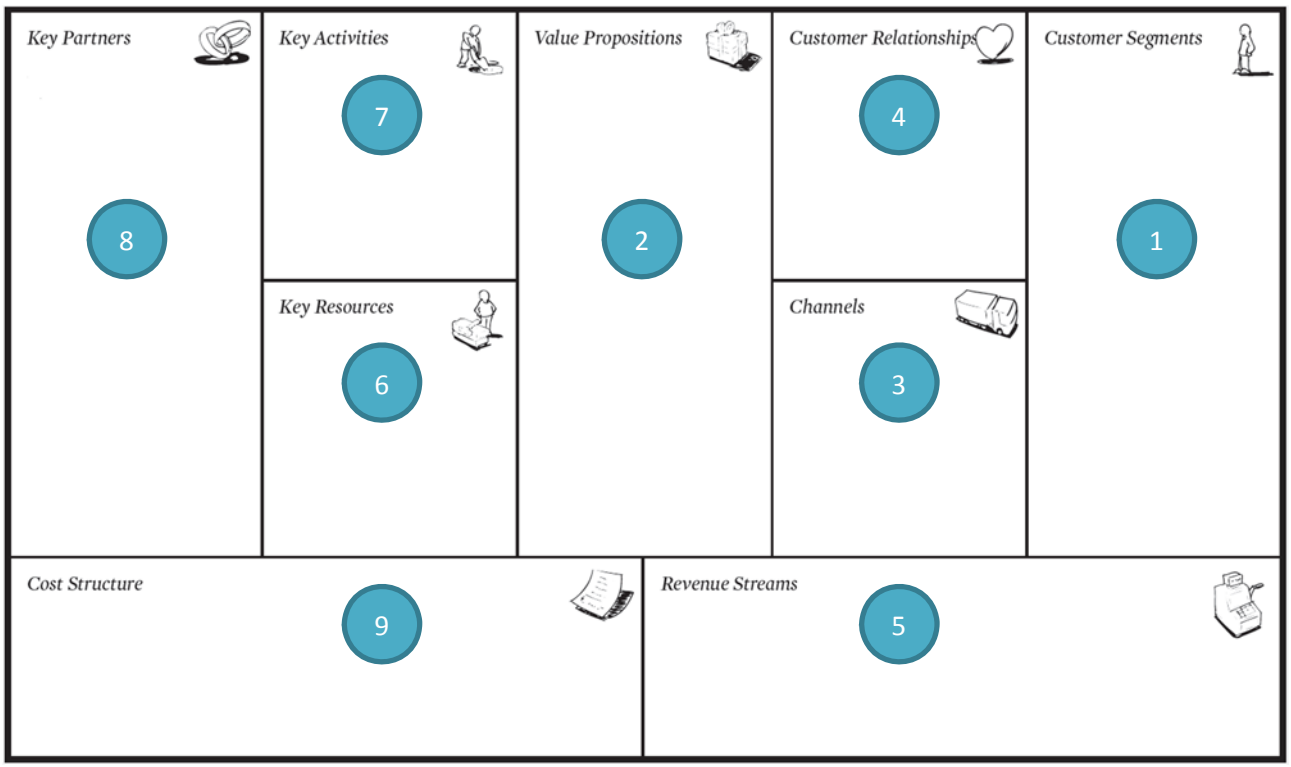
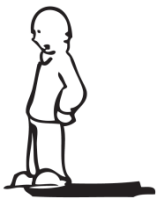
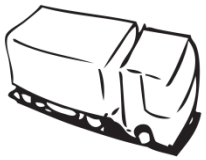



*Figure 2-2. The Business Model Canvas (Osterwalder & Pigneur 2010).*



**1. Customer Segments**: *This building block defines the different groups of people or organizations an enterprise aims to reach and serve*. There are different types of customer segment that you might choose to address. A 'mass market' focus generally requires lower cost solutions and higher volumes of production. A 'niche market' focuses on one customer segment that has a different set of requirements to the mass market, but they may be willing to pay a price premium for a suitable solution. A niche market is often a great starting point for new companies. Finally, a 'diversified market' approach tries to address several different customer segments at the same time and requires the ability to offer customization of the solution provided.

**2. Value Proposition**: *This building block describes the bundle of products and services that create value for a specific Customer Segment.* This is the central block of the canvas as it is often considered the most important aspect of a business model. In this block, we face our customer segments and ask, "What value are we delivering to our chosen segment(s)?" Whatever the goods and services provided by a company as part of their value proposition, fundamentally the value proposition must either help to resolving a key challenge for the customer (e.g. reduce the cost of wasted energy, or the risk of not being able to purchase the materials they need), t provide new opportunities for the customer such as accessing new markets that have an interest in environmental sustainability – see the UNEP 'Business Case for Eco-innovation' report for more examples of the types of value that can be derived from eco-innovation. The value proposition should be reviewed frequently to ensure that it remains valid and relevant within the ever-changing market conditions.



**3. Channels**: *This building block describes how a company communicates with and reaches its Customer Segments to deliver a Value Proposition.* Topics covered in this building block include communication of pre-sales information (i.e. how will the customer hear about the product and understand how it will benefit them?), purchase and delivery mechanism of the product or service (i.e. how will the customer buy the product and make sure it is delivered to them?) as well as post-sales activities (i.e. how will the customer access support/maintenance services and how will we deliver those services?). It is worth remembering that partnering with other organizations can be a fast and cost-effective way to build the complete range of channels required (e.g. distributor, retailer, maintenance organization etc.) – see the Key Partnerships block for further details.

Case study

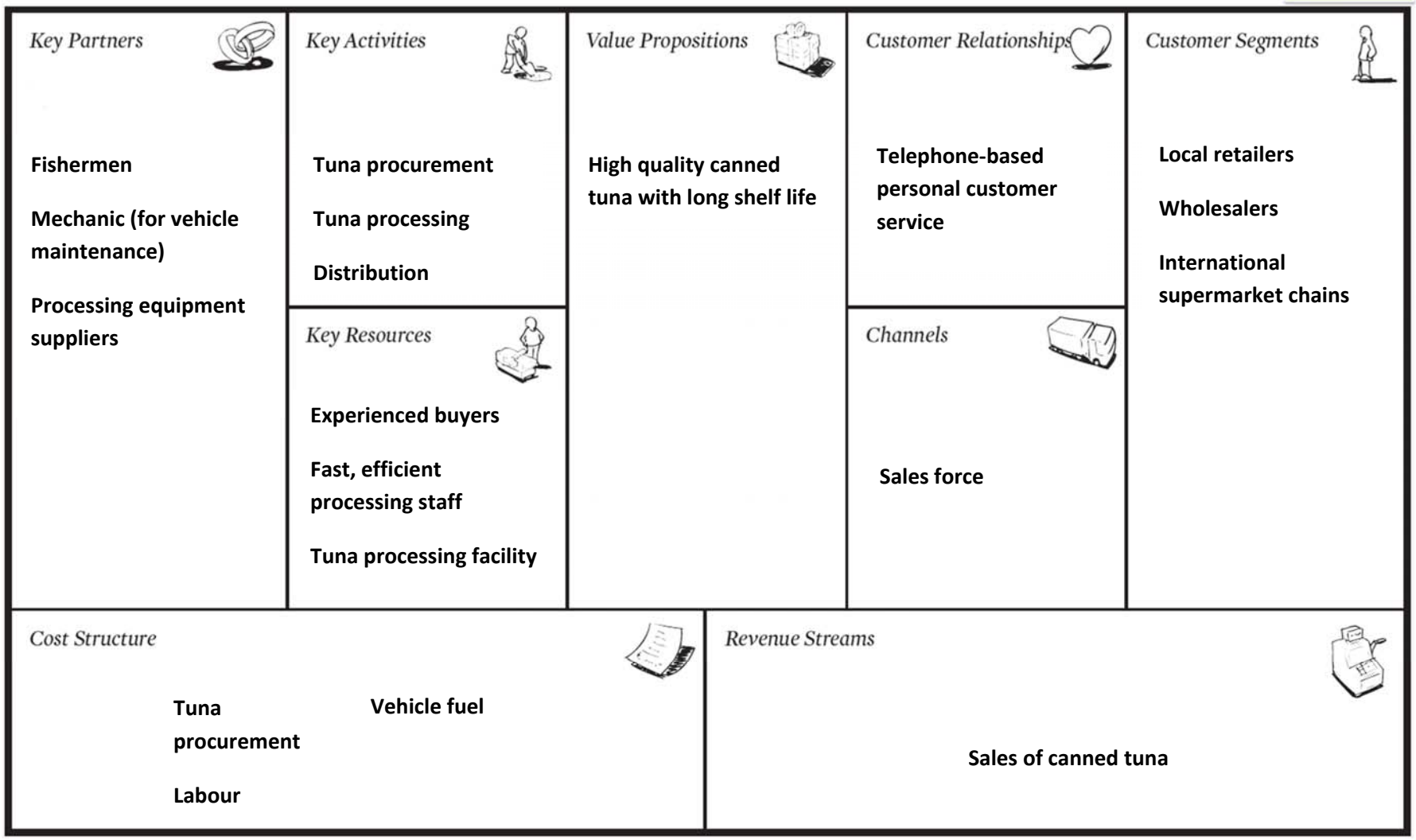



*Figure 2-2. Example of the Business Model Canvas for the Tasty Tuna Company*

**4. Customer Relationships**: *This building block describes the types of relationships a company establishes with specific Customer Segments.* It is important to understand what the company wants to achieve through its customer relationships and also what is expected by the customer. In a high growth market, the aim of the company may be to acquire new customers and build market share. In a mature market the focus might be on retaining existing customers. The other consideration is what the customer expects in terms of their relationship with the company. Customer segments that are very price sensitive may be happy to use self-service or automated services (e.g. Internet banking available for average bank customers) whereas if you are targeting high-end customer segments the customer may expect a higher level of human interaction to provide a more personalized service and a stronger relationship with the company (e.g. dedicated banker available for high net worth customers).

**5. Revenue Streams**: *This building block represents the cash a company generates from each Customer Segment (costs must be subtracted from revenues to create earnings).* Here, the company needs to decide if they will make one-off sales of a physical product, or lease that product, or ask customers to pay for their usage of the product? Such decisions need to be based on a good understanding of exactly what it is that the customer values about your product or service and what they are willing to pay for it. Personnel involved in sales and marketing should be able to provide good customer insight on this type of issue, but market research may be required when dealing with new products or significant innovations within existing products.

**6. Key Resources**: *This building block describes the most important assets required to make a business model work*. This can refer to the basic raw materials used to make product, the people employed by the company that are important to its success, or financial resources that enable the company to invest in research and development. Intellectual resources, such as patents and trademarks, can also be very important as these can be used to protect your business model from replication by competitors.

**7. Key Activities**: *This building block describes the most important thing a company must do to make its business model work.* This could be the development of new products, production processes, problem solving or even the creation of a platform or network.

**8. Key Partnerships**: *This building block describes the network of suppliers and partners that make a business model work.* For a partnership to be successful, all parties have to see a clear business benefit for participating and have incentives to ensure they will deliver their element of the partnership arrangement. Reasons for pursuing partnerships include: working with a reseller or distributor to enter new geographical markets; partnering with a company in a related market to provide a more integrated service for the customer (e.g. hotel operator partnering with a taxi company to offer pre-booked airport transfers for hotel customers); collaborating with a university research centre to get access to new technology and intellectual property etc.

**9. Cost Structure**: *This building block describes all costs incurred to operate a business model.* Costs may be 'fixed', which are independent of the number of products sold or services delivered (e.g. rent and salaries), or 'variable', whereby the costs increase with the volume of products and services delivered (e.g. production process energy costs, raw material costs etc.). It is worth noting in this block any 'economies of scale' benefits that the business model offers (e.g. bulk discount on large orders of raw materials).

### 2.2.4. Capturing the current operational performance

A good starting point for your data gathering about the current operational performance of the company is a walk-through audit of the company's operations guided by the Focal Point member of staff. Suggestions for the things to look for and questions to ask your tour guide when completing the walk-through audit are provided in the *Walk-Through Audit* template provided in the *Tool Instructions* document.

The next step in your data gathering activity might be interviews with individual employees, either to follow-up on issues highlighted by the walk-through audit, or to investigate new areas that might be relevant. Sometimes it can be preferable to organize a workshop with key personnel from across the company instead of conducting individual interviews. A workshop can be more time efficient for you and can help to build interest and engagement from staff. However, conducting a workshop is optional as it may not always be possible to arrange this type of session due to time and practical constraints. Below some further guidance on how to prepare for the workshop is provided.

The aim of the workshop is to find out about the current operational performance of the company from a sustainability perspective and the factors that might affect the ability of the company to become more sustainable. The types of questions to be answered by the workshop participants include:

- Which phase of your product life cycle makes the biggest contribution to the overall environmental impact of your product in your opinion?
- What are you doing to address the impacts of this biggest contributing phase?
- Which phase or activity within your product's life cycle are you most concerned about and why? – See the *Life Cycle Thinking* exercise below for a good way to promote discussion about the life cycle sustainability impacts of the product.
- Are you receiving pressure from your customers or other stakeholders to improve the environmental performance and quality of your products or operations?
- If so, what specific issues are they interested in (e.g. energy consumption in use phase, compliance with hazardous substance regulations, gender equality)?

The workshop should involve personnel from across the different operational areas of the company (design, production, marketing etc.). The participation of the CEO or senior management is not required (if they would like to attend this should not be discouraged). Aim for between 4 and 10 participants in the workshop from the company. The ideal group size will depend on the company, but in general – fewer than 4 can result in limited discussion and ideas and conversely, more than 10 participants can make it difficult to remain focused (and will be very expensive for the company).

To help you answer these questions there are some specific workshop activities that can be helpful. Again, these activities are optional, so you may need to gather this information through interviews with key staff if you are not able to capture the information you need during a workshop session.

*Life Cycle Thinking* - helps you to build a better understanding of the major sustainability impacts of the company's products across their life cycle and promotes thinking about the threats and opportunities related to these impacts. Participants are first asked to think of all the environmental, social and economic impacts that occur across the life cycle of the product and note them down in the relevant life cycle phase box.

Case study

| | **Raw Materials** | **Production** | **Transportation** | **Use** | **End of Life** |
|---|---|---|---|---|---|
| Material and water intensity | *Unsustainable fishing methods causing tuna stock depletion* | *Significant fish waste during processing. Water emissions contaminated with organic waste* | *Concerns over leaching of heavy metals from damaged tin cans* | *Concerns over mercury content of tuna* | *No recycling infrastructure for tin cans available in local markets* |
| Energy intensity | | *High energy use in cooking process* | | | |
| Health & Toxicity | | *Complaints from staff about lack of personal protective equipment* | *Concerns over leaching of heavy metals from damaged tin cans* | *Concerns over mercury content of tuna* | |
| Other social | *Fishermen leaving industry to seek higher wages* | *Gender discrimination keeping women out of management roles.* | Noise and traffic disruption to local community | | |
| Profitability | *Rising cost of fresh tuna supplies* | | *Increasing fuel costs for distribution* | *Lower retail prices achieved due to global recession* | |
| Job creation and security | *Fishermen leaving industry to seek higher wages* | | | | |

*Figure 2-3. Example of a completed Life Cycle Thinking tool for the Tasty Tuna Company.*

The second part of the activity is to convert the life cycle boxes into a matrix with columns representing each phase of the product life cycle and rows covering different types of sustainability aspects (Material

and water intensity, Energy intensity, Human health and toxicity, Other social issues, Profitability, Job creation and security). The participants categorize the issues identified previously into the relevant cells of the matrix, as shown in Figure 2-3. Cells that contain a large number of issues are considered to be 'sustainability hotspots'.

*Value Chain Pressures* – enables you to determine the extent to which the COMPANY is currently helping or hindering the creation of a more sustainable value chain. If the COMPANY is completing more actions to improve sustainability performance by working with its suppliers than it is being requested to do by its customers, then the COMPANY is having a positive impact on the sustainability performance of the value chain, see Figure 2-4 below.

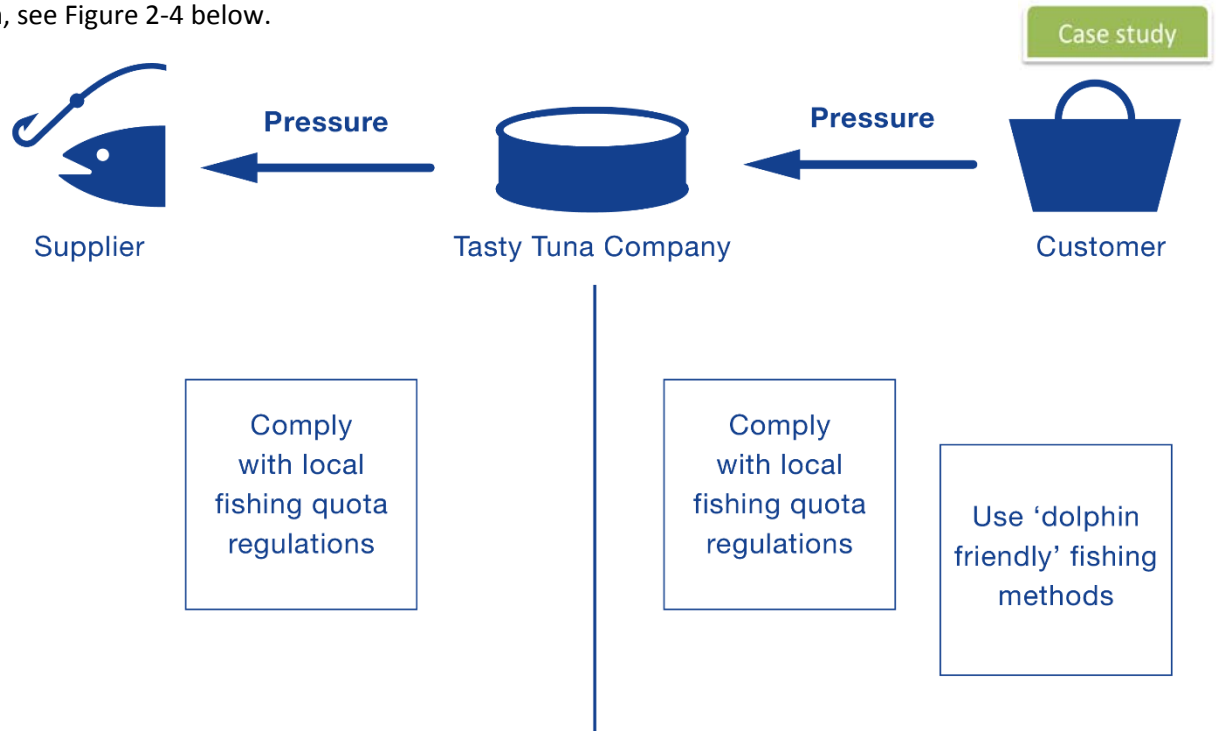



*Figure 2-4. Value Chain Pressures tool.*

Full instructions for the *Life Cycle Thinking* and *Value Chain Pressures* tools are provided in the *Tool Instructions* document, along with the associated worksheets.

### 2.2.5. SWOT analysis

You should by now have a reasonable understanding of the current business strategy, business model, operational performance of the company and some of the major opportunities and threats it is facing. At this point it is useful to summarize and analyse these data using a SWOT matrix. A SWOT matrix separates out internal vs external factors and helpful vs harmful factors that will influence the ability of the company to become more sustainable. The sources of data that can be used to complete the SWOT matrix are shown in Figure 2-6, below with further details provided in the *Tools Instructions* document. Figure 2-7 shows the SWOT matrix applied to the Tasty Tuna case study.

As you apply the SWOT analysis procedure it may be possible to identify innovation ideas that would enable the company to address the threats or to capitalize on the opportunities highlighted. However, the aim of this activity is simply to process the data into a more usable summary, which will be helpful when defining the business strategy for the company, described in the next section.

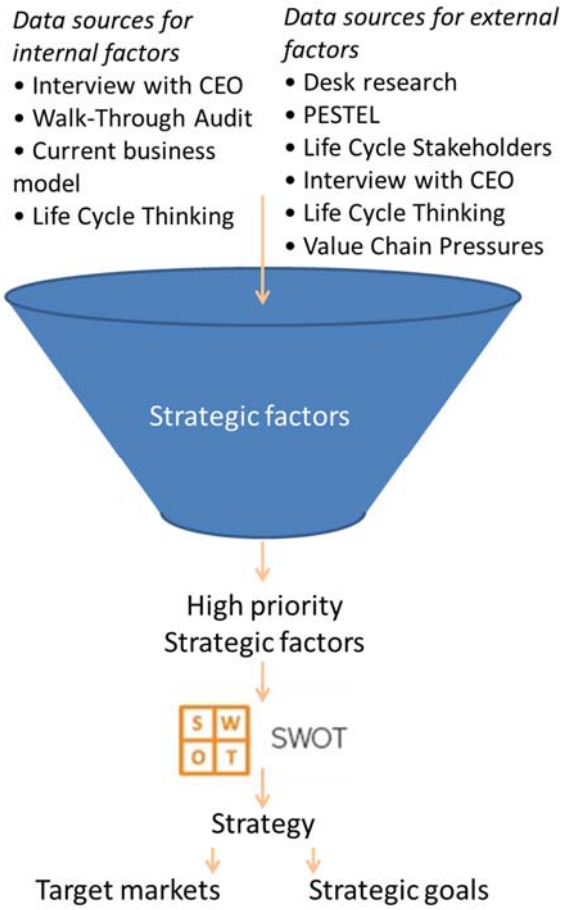



*Figure 2-6. Data sources and process for the SWOT analysis.*

Once you have completed the SWOT categorization, the final step in the data analysis is to prioritize the factors. There is no single method for prioritizing the factors that have been identified but you should aim to compile a list of the top five helpful factors (opportunities or strengths) and the top five harmful factors (weaknesses or threats). The following section describes how you can use this shortlist of helpful and harmful factors to provide the focus and foundation for the development of a new business strategy for the company.

Management milestone

*You should ask the CEO and Senior Management Team for feedback on the SWOT analysis completed at this stage. If you have missed an important issue, of if they do not agree with your conclusions, your efforts in defining a new business strategy will likely take you in the wrong direction.*

| Case study | **Helpful**<br>to becoming more sustainable | **Harmful**<br>to becoming more sustainable |
|---|---|---|
| **Internal origin**<br>(attributes of the company) | **STRENGTHS**<br>• Well-optimized manual processing of tuna thanks to skilled, loyal workforce.<br>• Effective, innovative and adaptable sales and marketing team. | **WEAKNESSES**<br>• No internal capacity for packaging material innovation.<br>• Low profit margins mean little financial capital for investment.<br>• Production Manager due to retire in one year.<br>• Lots of female workers but none in Senior Management Team. |
| **External origin**<br>(attributes of the environment) | **OPPORTUNITIES**<br>• Some markets interested in sustainably sourced fish.<br>• Good relationship with fishermen could be used to encourage more sustainable fishing methods. | **THREATS**<br>• Significant fish loss and waste between point of catch and point of consumption.<br>• Over-fishing and marine eco-system damage becoming an internationally important issue.<br>• Unsustainable fishing methods causing tuna stock depletion.<br>• Competition from rival tuna processers driving down profit margins.<br>• Reports of slavery-like conditions on board some tuna fishing vessels that belong to our suppliers.<br>• Rumours that new policy will ban certain unsustainable fishing methods. |

*Figure 2-7. SWOT matrix example for The Tasty Tuna Company.*

## 2.3.Defining the business strategy

Defining a business strategy is a challenging and complex activity. One approach to the analysis and formulation of business strategy that has gained significant support in recent years is 'Blue Ocean Strategy' (Kim & Mauborgne, 2005). Blue Ocean Strategy is based on the observation that in many markets, companies are facing "a bloody 'red ocean' of rivals fighting over a shrinking profit pool". To avoid this situation, the authors advise companies to rethink their business strategy with a focus on identifying and exploiting uncontested new markets, the so-called 'blue oceans'. They argue that this can be achieved by questioning some of the fundamental assumptions upon which current markets are based that shape the strategies of competitors and the types of products they develop. This type of fundamental rethinking of business strategy, customer needs and ways of working is closely aligned with the principles of eco-innovation and can therefore provide some useful guidance when trying to formulate an eco-innovative strategy.

One of the tools for strategy formulation described by the authors is the Strategy Canvas, which compares the relative level of importance placed on different competitive factors. The example shown in Figure 2-8 is an analysis of the traditional competitive factors that are considered important in the single serve, espresso coffee device market. Handpresso® (http://www.handpresso.com/) is a portable, hand powered, espresso-making device that aimed to create an uncontested market by focusing on a range of new 'Blue Ocean' factors that no other device satisfied, including:

- 'mobility' – for consumers that want to enjoy a fresh espresso at the top of a mountain!
- 'eco-properties' – for consumers that want to reduce the environmental impact of their coffee drinking habit.
- 'ceremoniality' – for consumers that take delight in the process of making their espresso.

As well as differentiating the product based on these new factors, the company were able to offer the product at a price point significantly lower than conventional single serve systems, making for a very strong value proposition for the markets they have targeted. Additional sources of information about applying the Blue Ocean Strategy principles and tools can be found in the references in Section 2.8.

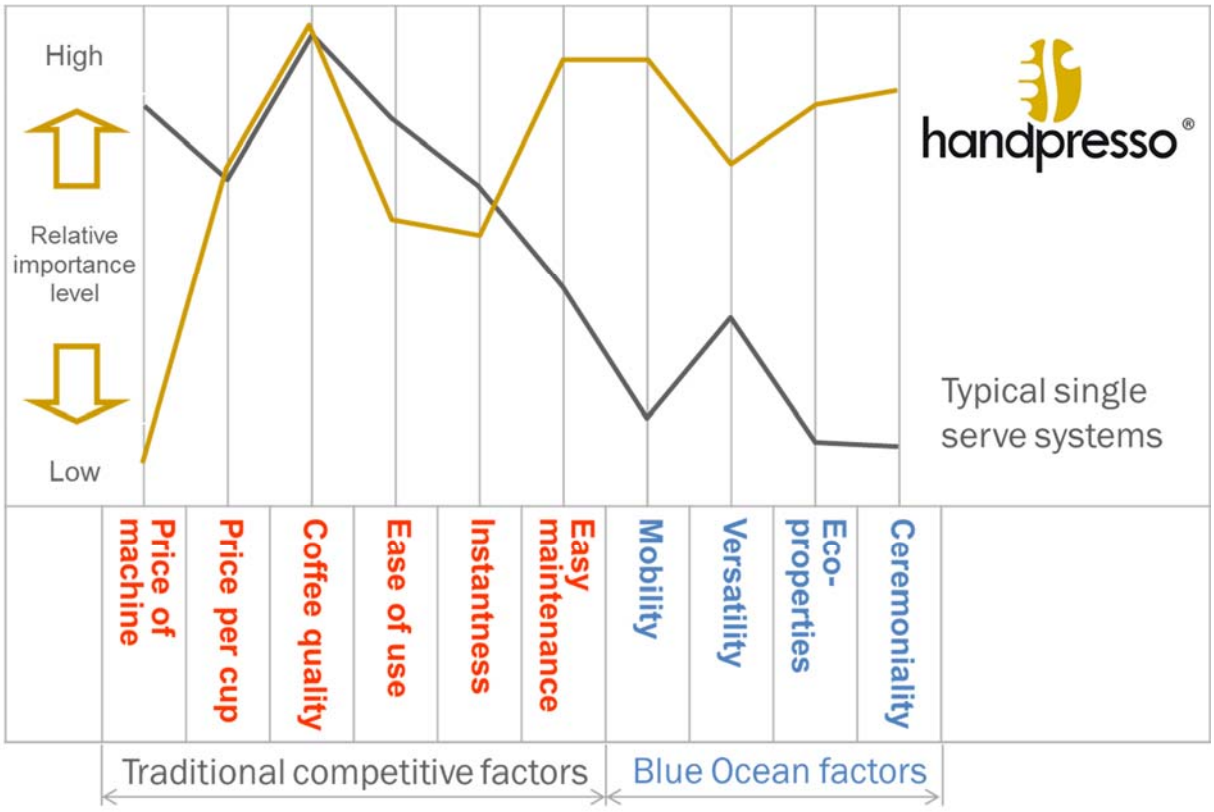



*Figure 2-8. Example of a Blue Ocean canvas for Handpresso (Nielsen, 2007).*

Whichever approach you take to strategy formulation, the two main elements required for a business strategy are the strategic goals and the types of markets the company will operate in. Further advice on what needs to be included in these elements is provided here.

**Defining the strategic goals**

The first part of the strategy is to establish a set of long-term, ambitious goals. These should provide a measurable and time-limited metric against which success can be judged. At least one goal should be set for each of the opportunities and challenges prioritized from the SWOT analysis in the previous section, but always try to keep the number of goals below ten as more than this will become bewildering and dilute their value. A good strategic goal should have the following characteristics (adapted from Collins & Porras, 1994):

**1. It has a long time frame—3-5 years or more** – The fundamental aim of a strategic goal should be to foster significant changes in the way the company operates. This type of transformation cannot be achieved overnight, so long timescales are required to make the goal realistic.

**2. It is clear, compelling, and easy to grasp** – The goal will need to be communicated throughout the company so it is important that it is unambiguous and phrased in a way that is positive and motivating.

**3. It reflects the core values of the company** – Whilst every commercial company aims to make money, there are always some other important reasons why a company exists and why it operates in the way it does – these are the core values of the company. Goals must adhere to, and help to realize, these core values.

The panel below provides some examples of goals for the Tasty Tuna Company.

***Sustainability challenges, opportunities and goals for Tasty Tuna Company***

| ***Helpful/harmful factors*** | ***Goal*** |
|---|---|
| *Significant fish loss and waste between point of catch and point of consumption* | *Reduce fish loss between point of catch and consumer by 30% within 3 years* |
| *Declining supply of good quality fish* | *Take action to secure adequate fish supplies within 5 years* |
| *Rumours that new policy will ban certain unsustainable fishing methods* | *Eliminate unsustainably caught fish from our supply chain within 4 years* |
| *Low profit margins means little financial capital for investment* | *To increase product sales to over $1 million within 3 years with a gross profit margin of at least 20% within 3 years* |
| *Competition from rival tuna processers driving down profit margins* | *To remain the market leader in the domestic market and become the market leader in our chosen export markets within 5 years* |
| *Reports of slavery-like conditions on board some tuna fishing vessels that belong to our suppliers* | *Work with suppliers and local authorities to eliminate worker mistreatment within supply chain within 5 years* |

**Defining the type of market the company will operate in**

Some information about the markets the company currently operates in, and the opportunities for eco-innovation within those markets, should have been captured during the PREPARE phase and the Preliminary assessment activity. Building on this, you should then try to abstract this information to define

the type of market the company could operate in (rather than naming specific markets) as then this information can be used as a guiding principle when scanning for opportunities to enter new markets.

There is not one set of key characteristics that can be used to describe a market, however, a couple of commonly used characteristics are:

- Market size – annual value of the Total Available Market. For further information on how to define market size see references in Section 2.9.
- Business-to-Business vs Business-to-Consumer – Selling to other companies, particularly large enterprises, requires very different approaches to marketing and sales compared to selling direct to consumers and so many companies choose to specialize in one of these types of market.

Case study

For example, the Tasty Tuna Company might decide to address the key sustainability issue of overfishing and tuna stock depletion by targeting smaller, but more profitable market segments in which the customer is willing to pay a premium price for sustainably sourced fish. This might lead the company to select the following two markets to target:

1. Domestic business-to-business food retail market segments worth US$ 10,000-500,000 that have shown a strong interest in sustainably sourced fish.
2. Export business-to-business food wholesale market segments worth more than US$ 50,000 that have shown a strong interest in sustainably sourced fish.

With a set of goals and a clear definition of the types of market the company should operate in, you have the basic definition of a new business strategy. In the following section, some advice on how to pitch this new strategy to the CEO and Senior Management Team is offered.

## 2.4.Pitching the new business strategy

The final activity in the SET STRATEGY phase is to pitch the new business strategy that you have developed to the CEO and Senior Management Team along with a proposal for an eco-innovation programme to support the implementation of this strategy.

A key part of this pitch should be a clear definition of the business case for eco-innovation, as discussed in Section 0.2.

Your role is to identify which of these generic competitive advantages the company is likely to gain (it could be all of them!) when implementing eco-innovation through the new business strategy and reinforce these claims with specific examples of the market opportunities that the company can pursue to realize these benefits. The second part of the pitch should outline the programme to implement eco-innovaton that you can offer to support the implementation of the proposed strategy. For example, you may have identified a market opportunity for a more sustainable product with eco-label certification. You could list eco-label certification as a deliverable and provide an estimate of the revenue that could be achieved with this new product as one example of the types of deliverables and business benefits that will be achieved through the eco-innovation programme.

It is up to you how you develop and present this pitch, but to help you get started some suggestions for topics to cover within the pitch are provided in the box below.

***Key points for pitching the new business strategy***


- Provide a brief reminder of the points you presented in your introductory pitch – see the red box in Section 1.5 for details.
- Also try to make it clear that adopting an eco-innovative strategy does not necessarily mean entirely abandoning their previous business strategy.
- Present the *SWOT* analysis you have completed, starting with the external factors so that the management team can see how they are impacting on the success of the company.
- Describe how you have used the *SWOT* analysis to define target markets and strategic goals.
- Outline the resources that will be required and the timescales involved in the initial stages of the implementation process – recognizing that at this stage it is very difficult to put accurate estimates on these figures.
- Provide details of the deliverables and outcomes that will be achieved through the eco-innovation programme.
- Conclude by asking for a decision (or a timescale for a decision) on how to proceed. The possible options are:
    - Agree to proceed – next step is to plan an in-depth assessment activity to gather the information you need to help initiate the eco-innovation programme and set the business model, goals and roadmap for the company.
    - Request for more information – next step is to gather the information requested and arrange another review meeting to present the information. Try to ensure that you are involved in gathering the missing information as if it is delegated to somebody else there is a risk that the information will take a long time to be collected.
    - Pause – There may be many reasons why the company might not feel ready to proceed with the programme. Try to determine exactly what it is about their current situation that is making them reluctant to proceed. Try to identify ways that you can help the company to get to a position where they would be ready to begin the programme. If possible, establish the conditions that would need to be in place for the company to proceed. Arrange a follow-up meeting with your Focal Point at the company so that you can check on progress.
    - Abandon – if the company decide that eco-innovation is not a suitable approach for their organization, try to establish what the main problems are from their perspective. The information you gather about this type of set-back can be very useful in refining your sales and marketing strategy.

Once you receive approval to proceed, you should organize a contract (if you have not already done so) that captures the detail of the services you will provide along with confirmation of the cost of these services.

## 2.5.Management considerations

Once the COMPANY has agreed to begin work to implement the new business strategy, there are a number of management-related issues that should be given some consideration. Because many of these issues relate to aspects of the culture or ways of working of the company they can take a long time to change. Hence it is important to begin thinking about these issues early in the process.

- **Embedding eco-innovation into the company culture** – When trying to implement major changes within a company, such as introducing eco-innovation, having a supportive company culture can greatly ease and accelerate the implementation of the changes. Conversely, a company culture that is resistant to eco-innovation can make it extremely difficult to make any progress. 'Change management' is the field of research that provides support to practitioners who are implementing change within a company. From this field, *Force Field Analysis* is a tool that can help you to understand if the culture of the company is likely to support or resist eco-innovation before you begin implementation activities, and can help you to identify and prioritize issues that will need to be addressed to encourage a culture that is more supportive to eco-innovation. A detailed explanation of how to apply *Force Field Analysis* is provided in the *Tool Instructions* document.
- **Managing eco-innovation research and development alongside routine operations** – Research suggests that trying to manage radical innovation activities, such as eco-innovation, alongside the routine, day-to-day operations of a company can be challenging. For staff working on eco-innovation activities there is often a conflict between the responsibilities they have for day-to-day operations and the contributions they are expected to make to the eco-innovation activities. This has led to suggestions that eco-innovation should be separated from the day-to-day operations of the company. However, this is often not practical in small companies, and may also mean that the outputs of a research project are not supported or adopted within the rest of the organization. Finding the right solution to this conflict will depend on the specific situation. A compromise solution may be to ask staff working on the project for eco-innovation to dedicate specific days of the week to their eco-innovation activities. The key is then ensuring that this is enforced, both by the staff and by their colleagues. Other simple measures such as having separate email addresses for people for when they are working on eco-innovation activities, and even a separate desk or work area, can all help to maintain the separation between eco-innovation and routine activities.
- **Making use of opportunities for internal communication** – It is important to think about the message that is communicated to employees about the company's plans and objectives for implementing eco-innovation. In all cases, it is important that the Senior Management Team is seen to support eco-innovation. Company newsletters, bulletin boards and general meetings are all opportunities for senior management to explain why the company has chosen to implement eco-innovation and the likely benefit for the company and for employees. Internal communication can also be used to address specific concerns or problems. Remember also, that internal communication should be a two-way flow, so try to identify opportunities for employees to express their views, concerns and ideas throughout the process.
- **Enhance the sustainability knowledge and skills of the workforce** – eco-innovation requires a variety of knowledge and skills such as life cycle thinking, product environmental assessment, green marketing etc. These skills and knowledge may not be present in the existing workforce. As the Service Provider you will often be required to fill these knowledge and skill gaps for the COMPANY

in the short term, but this is not a scalable, long-term solution. You should therefore try to work with the COMPANY to identify where knowledge and skill gaps exist and develop a plan for addressing these gaps. This may include recruitment of new staff that possess those skills, but training of existing employees should always be considered first as this has the added benefit of helping to improve employee retention and satisfaction.

- **Empowering employees through a flat organizational structure** – a number of companies have found that restructuring the management hierarchy and at the same time encouraging employees to be more autonomous and pro-active in managing their own performance can lead to improved productivity, innovation and employee satisfaction. This approach is built on the assumptions that most employees: want to be part of a successful company; understand how they can contribute to that success; and have the right knowledge and expertise to do their job effectively. If this is correct, then allowing employees to take responsibility for their work results in better performance, whilst also reducing the need for managers who may frustrate their subordinates by 'interfering' or being overly prescriptive in their guidance. One example of this approach is Google, who famously allow the employees to spend 20% of their time on projects that they consider interesting or potential valuable but have also implemented a range of other measures to encourage employee empowerment (He, 2013). In another example, the computer games developer, Valve, has created a completely flat organizational structure, with no managers other than the CEO. The employee handbook describes how the company operates without the presence of managers (Valve, 2012). Whilst neither of these examples may be directly transferrable to the context within the COMPANY, they do provide some inspiration for how a company can reorganize itself to ensure that its gets the best from its employees and allows them to make full use of their innovation potential – an important issue for eco-innovation.

## 2.6.Checklist

| **SET STRATEGY phase** | (Tick when complete) |
|---|---|
| Have you captured and understood how the company currently operates including details of the current business strategy, business model and an overview of current operational performance? | ☐ |
| Have you identified the main sustainability hotspots along the value chain? | ☐ |
| Have you performed a SWOT analysis of the company in its current situation? | ☐ |
| Have you delivered a brief report summarizing the data gathering activity and SWOT analysis to the COMPANY? | ☐ |
| Have you developed a proposed business strategy for the company and an associated set of strategic goals? | ☐ |
| Have you created an outline plan for a programme to support the implementation of the strategy? | ☐ |
| Have you presented your strategy proposal and programme pitch to the CEO? | ☐ |
| Have you begun to think about some the important management considerations involved in implementing eco-innovation? | ☐ |

## 2.7.Supporting tools

The following tools are relevant for this section of the manual. Details of how to apply the tools and templates are provided in the *Tool Instructions* document.

*Walk-through Audit*

**Description:** This guide can be used to help efficiently gather information when performing a walk-through audit.

**Who?:** This tool is intended for use by the Service Provider.

**When?:** During the SET STRATEGY phase.

**Inputs:** Generic and specific questions and guidance notes related to the different departments and parts of the company you may encounter during the tour.

**Outputs:** Basic data about the operational performance of the company that can be used as part of the Preliminary Assessment and as a data source for the *SWOT* analysis.

*Business Model Canvas*

**Description:** The business model canvas supports the business model innovation process by providing a simple, visual representation of a business model, consisting of 9 'building blocks' that describe the key features of how the business works.

**Who?:** This tool is intended for use by the Service Provider working alone.

**When?:** During the SET STRATEGY phase to capture the existing business model.

**Inputs:** Details of the current business model.

**Outputs:** A concise and well-structured representation of the COMPANY's current business model.

*Life Cycle Thinking*

**Description:** This exercise will help you to identify the sustainability hotspots across the life cycle of the COMPANY's products. Participants are first asked to list environmental, social and economic sustainability issues that occur at each phase of the product life cycle. These issues are then placed into categories and the hotspots are noted.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with 2-6 key representatives from the COMPANY.

**When?:** During the SET STRATEGY phase. The Life Cycle Thinking template is also used in the *In-Depth Assessment* as part of the idea evaluation process during the SET BUSINESS MODEL phase.

**Inputs:** Environmental, social and economic sustainability issues related to the life cycle of the COMPANY's products.

**Outputs:** Identification of the life cycle sustainability hotspots for the COMPANY's products, which can inform the *SWOT* analysis.

*Value Chain Pressures*

**Description:** This exercise enables you to determine the extent to which the COMPANY is currently helping or hindering the creation of a more sustainable value chain. It does this by asking for examples of sustainability-related actions that the COMPANY has asked its suppliers to perform or has completed in response to requests from its customers.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with 2-6 key representatives from the COMPANY.

**When?:** During the SET STRATEGY phase.

**Inputs:** Examples of sustainability-related actions requested of them by their customers and the actions that the COMPANY asks its suppliers to perform.

**Outputs:** Indication of the net contribution the COMPANY has in creating pressure to improve sustainability performance in its value chain, which can inform the *SWOT* analysis.

*SWOT*

**Description:** SWOT is a strategic analysis tool that aims to identify the factors that originate within the company (strengths and weaknesses) as well as those that originate in the external environment (opportunities and threats) that could have a significant influence on the choice of business strategy.

**Who?:** This tool is intended for use by the Service Provider working alone.

**When?:** During the SET STRATEGY phase.

**Inputs:** Information about significant strategic issues facing the company.

**Outputs:** Categorized set of strategic factors to support strategy development.

*Force Field Analysis*

**Description:** This tool provides a structured approach to analysing the factors that are likely to make implementing a change easier, and the factors that will create resistance to the change.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with 2-6 key representatives from the COMPANY.

**When?:** During the SET STRATEGY phase.

**Inputs:** A proposal for a significant change for the company.

**Outputs:** An assessment of the drivers and barriers for the proposed change and suggestions for how to

make the conditions more favourable for the change. This can be used to inform actions to make the changes introduced through the eco-innovation programme easier to implement.

## 2.8.References and resources


Business Model Canvas:

Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. Wiley, London.

The Business Model Canvas can be downloaded here:
http://www.businessmodelgeneration.com/downloads/business_model_canvas_poster.pdf

Business strategy:

Porter, M.E., 1980. Competitive Strategy: Techniques for analyzing industries and competitors. The Free Press, New York.

Kim, W.C. & Mauborgne, R., 2005. Blue Ocean Strategy: How to create uncontested market space and make the competition irrelevant. Harvard Business Review Press, Boston.

Market segmentation and size:

Schade, C. (2009). TAM, SAM, SOM – Market evaluations easily explained [Online].
Available from: http://tamsamsom.blogspot.co.uk/2009/03/tam-sam-som.html

Market segmentation [Online].
Available from: http://en.wikipedia.org/wiki/Market_segmentation

Bournemouth University. Market segmentation [Online].
Available from:
http://media3.bournemouth.ac.uk/marketing/07segmentation/04strategies.html

Management considerations:

Burnes, B., (2004). Managing Change. London, Pearson Education UK.

He, L., (2013). Google's Secrets Of Innovation: Empowering Its Employees [Online].
Available from: http://www.forbes.com/sites/laurahe/2013/03/29/googles-secrets-of-innovation-empowering-its-employees/

Valve, (2012). Valve hand book for new employees [Online].
Available from: http://assets.sbnation.com/assets/1074301/Valve_Handbook_LowRes.pdf

# 3. SET BUSINESS MODEL

The SET STRATEGY phase has helped the COMPANY to describe what they would like to achieve. The SET BUSINESS MODEL phase is about developing a more detailed understanding of the way the company is structured and operates as well as its strengths and weakness so that a suitable business model can be defined that will help to deliver the strategy that has been formulated.

## 3.1.Overview

Looking again at the model of eco-innovation, shown in Figure 3-1, we see that the business model sits between the strategy level and the operational level. In this position, the business model acts as an intermediary between the business strategy and the day to day operations. It helps to ensure that the operational level activities come together as a coherent whole and should focus and guide these activities in the direction set within the business strategy. This helps to ensure that eco-innovation becomes a mainstream activity throughout all activities, at all levels of the company.

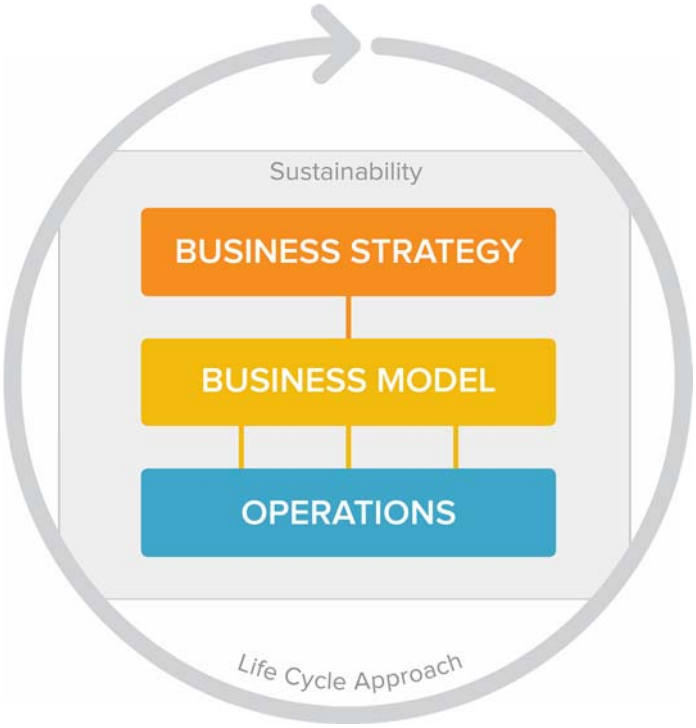



*Figure 3-1. Conceptual model of eco-innovation*

An important point to note about this model is that the business strategy, business model and operational activities are interlinked vertically. This means that when changes occur at one level, there will need to be changes at the other two levels in order to maintain alignment between these three levels. Generally, there should be little change in the business strategy once it has been set, acting as a type of foundation for the company. But when setting a business model, it is likely that there will need to be some iteration in the plans to ensure that the business model remains aligned with the business strategy and at the same time is consistent with the reality of the company's operational performance. So whilst the remainder of this section suggests a linear process for setting the business model, it is likely that you will need to cycle through this process several times before you find a well-aligned business model.

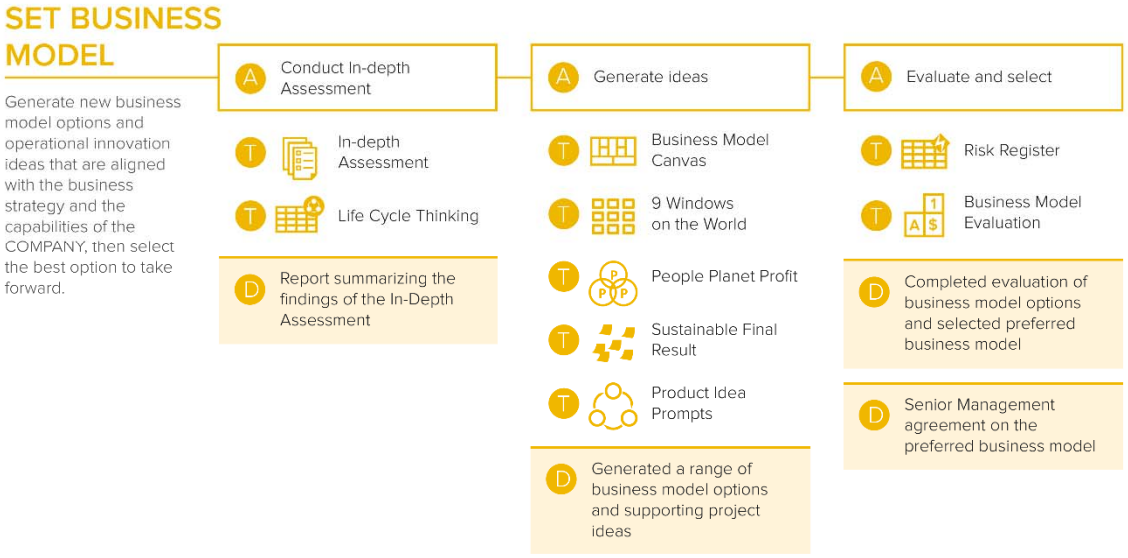



*Figure 3-2. Overview of the SET BUSINESS MODEL phase.*

## 3.2.Business model innovation process

Business model innovation is a key activity of the eco-innovation implementation programme. The approach presented here is based on an adapted version of the 'business model canvas' (Osterwalder & Pigneur, 2010), which has become a popular framework for supporting business model innovation in recent years. The business model canvas provides a simple, visual representation of a business model, consisting of 9 'building blocks' that describe the key features of how the business works. The business model canvas is described in detail in the following section.

The process of business model innovation consists of three main activities (see Figure 3-2):

- **In-Depth Assessment** - quantitative and qualitative data is collected about all aspects of the company in order to build a comprehensive understanding of the current performance of the company. These data are then analysed to identify (or quantify) the key challenges and opportunities facing the company, building on the work completed during the SET STRATEGY phase.
- **Idea generation** – Ideas for alternative business models are generated by considering the opportunities and challenges previously highlighted. There are two potential routes to developing a complete business model option, 'Top-down' and 'Bottom-up'. The Top-down route begins by looking at the big picture of the business model and looking for ideas by drawing inspiration from common patterns of business model innovation. Having developed some big picture ideas, the challenge is then to think about the implications of these proposed changes at the operational level. Operational areas that have new demands placed on the company by the proposed business model must be identified and ideas generated for how to address these new demands (e.g. new product ideas, new production processes, new sales channels etc.). The Bottom-up route takes the opposite approach. It begins by generating ideas for innovation at the operational level that address the challenges and opportunities previously identified. It then requires you to think about

how the business model would need to be adapted to accommodate and maximize the benefits from the innovations at the operational level.

- **Evaluation and selection** – Once a number of different business model options have been generated, the last activity involves a systematic evaluation of the business model options in terms of benefits, costs and risks with respect to environmental, social and economic factors. This evaluation leads to the selection of a preferred business model that can be taken forward for implementation.

As you go through the business model innovation process, you may identify a need for some amount of new technology (including expertise in the use and maintenance of that technology). This new technology may need to be developed in-house, but can also be acquired through other means (e.g. licensing, open innovation, technology transfer etc.). Further advice on how you as a Service Provider can support the COMPANY throughout all the stages of acquiring the technology they need to deliver their eco-innovation is provided in the report *Moving ahead with technology for eco-innovation* (UNEP, In press).

The following sections introduce the business model canvas and then provide guidance on how to proceed through each of the three steps of the business model innovation process.

## 3.3.In-depth assessment

The *In-Depth Assessment* tool, found in the *Tool Instructions* document, provides details of the type of data that should be collected and questions that should be asked to understand the current situation of the company. A variety of quantitative and qualitative data is gathered relating to each of the building blocks of the business model canvas.

Collecting the information necessary to complete the *In-Depth Assessment* tool will likely require input from personnel throughout the company so it is important to identify the people you will need to speak to early in this phase and begin scheduling meetings or phone calls with those people. The aim is to understand (and quantify where possible), in each area of the company:

- What is the situation today?
- What factors are influencing performance today?
- How might these influencing factors evolve in the future?

An important aspect of the *In-Depth Assessment* is developing a baseline in terms of the performance of the company against key sustainability metrics. To measure life cycle environmental impacts in a rigorous and scientific manner requires tools such as 'Life Cycle Assessment' (LCA) and 'Social Life Cycle Assessment' (SLCA). LCA and SLCA are both major topics in their own right and is not the aim of this manual to provide a comprehensive introduction to this field. Further information on UNEP activities to support the application of LCA can be found at the Life Cycle Initiative website – see the references section for further details. Similarly, for details of SLCA approaches see the UNEP publication 'Guidelines for Social Life Cycle Assessment of Products'.

One issue to keep in mind is that conducting a detailed LCA conforming to international standards such as ISO 14040:2006 generally requires a significant investment of time and money (upwards of US$10,000 and 6 person-months). Also, eco-innovation ideas can be very difficult to evaluate using conventional LCA or SLCA approaches as the necessary input data is often very imprecise or simply not available. For these

reasons, you may decide to use simplified approaches to understanding the life cycle sustainability impacts of a product, such as the *Life Cycle Thinking* tool.

The *Life Cycle Thinking* tool was introduced in Section 2.2.4 to promote discussion and a qualitative assessment of the main sustainability impacts from across the product life cycle. At this stage in the process, it should now be possible to begin to quantify some of the issues highlighted during the SET STRATEGY phase in order to verify the scale of the issue. For instance, it may be possible to estimate the amount of waste sent to landfill by the company based on invoice data from their refuse services provider. Similarly, it should be possible to calculate the overall energy consumption at the manufacturing facility from utility bill data (a breakdown of these data by production process would be very useful but will often be difficult unless separate energy metering has been implemented). Further guidance on the types of data to collect is provided in the detailed instructions for the *In-Depth Assessment* tool in the *Tool Instructions* document.

Once you have finished gathering data it is worth spending some time analysing the data to identify the strengths and the weaknesses of the company. Summarizing the results of the *In-Depth Assessment* and your analysis into a short report can make a valuable deliverable for the COMPANY. Later in this section you will use the information gathered during the *In-Depth Assessment* and the strengths and weaknesses you have identified to help define the business model and assess the effort required to implement the preferred business model.


*The completion of the In-Depth Assessment report is another good opportunity to get feedback from the Senior Management Team in order to validate your findings and conclusions. If they are not willing to provide feedback, this may be an indicator that there is not sufficient engagement from the Senior Management Team to proceed.*

## 3.4.Generating ideas at the big picture level

Generating ideas at the big picture level aims to develop a number of business model options that are internally consistent and help to maximize the environmental, social and economic sustainability of the company. Details of the process for applying the business model canvas are provided in the *Tool Instructions* document. In this section some examples of common 'business model patterns' are provided as well as an example of an eco-innovative business model for the Tasty Tuna Company are provided as inspiration.

**Business model patterns**

A number of patterns in the business model innovations of successful companies have been noted by Osterwalder and Pigneur (2010). Here a brief description of some of the most relevant patterns is provided – see the References and Resources in Section 3.9 for further details.

*Unbundling pattern* – This pattern is based on the view that there are three fundamental types of business that exist:

- **Product innovation businesses** – aim to charge a price premium for advanced, market-leading products (e.g. Apple in the consumer electronics markets).
- **Customer relationship businesses** – aim to use customer service excellence to retain loyalty whilst increasing revenue from existing customers (e.g. British Airways in the air travel market).

- **Infrastructure businesses** – aim to gain economies of scale benefits to offer low costs to large markets (e.g. most telecommunications companies).

Some companies combine two or more of these types of business within their business model. The problem with a business model that combine business types is that they often have conflicting pressures i.e. offer personalized customer service vs improving efficiency and scalability. In such cases unbundling can help to eliminate these conflicts and allow the company to focus on one core business type. This requires the company to decide which of the three types of business it wants to focus on and then find a way to divest or offload the parts of its current business model that are no longer required.

*Multi-sided platform* – This type of business models relies on having at least two distinct customer segments that provide a mutual benefit in some way, which would not exist without both parties. Examples include eBay (buyers + sellers), Visa (shoppers + shopkeepers), and Google (users + content providers). MLouma (www.mlouma.com) is a platform, accessible via the Internet, SMS and a call centre, which connects farmers directly to green grocers throughout Senegal. By allowing farmers to market and sell their goods in real-time to hundreds of small grocers, both sides are able to achieve higher profits by cutting out the many intermediaries that existing in the conventional value chain.

*Free as a business model* – A value proposition can be offered at no cost to one customer segment if it is funded by another customer segment or another part of the business model. Examples include free newspapers or social networking sites (e.g. Facebook) in which the product is offered for free because the large customer base attracts advertisers, whose advertising fees subsidize the cost of offering the product. Another example is Skype, which takes the revenue from the 10% of paid for SkypeOut calls to subsidize the service for the 90% of calls and video calls that are made for free. Finally, there is the 'bait & hook' approach which has proved popular in areas such as the mobile phone market. In this case, the mobile phone is provided to the customer for free in return for a monthly subscription which ensures that the cost of the phone is eventually recovered from the customer.

Spending some time thinking about how these patterns could be applied to the COMPANY's business model can be a useful way of identifying radically different approaches to delivering a profitable and sustainable business model. Full details of the process of applying the Business Model Canvas are provided in the *Tool Instructions* document.

Case study

**Eco-innovative business model for the Tasty Tuna Company**

Figure 3-3 provides an example of an alternative business model option for the Tasty Tuna Company. This particular business model option aims to contribute to each of the strategic goals previously defined. Efficient tuna processing, canning, distribution and selling are all key strengths of the company that were considered important to retain in the new business model. The new business model was generated from an idea to change the value proposition of the company to providing a tuna processing, canning, distribution and sale service for fishermen. Instead of the company paying the fishermen for their tuna, the fishermen would pay the company to process on their behalf. The fishermen could then sell the canned tuna to the retailers themselves or they could pay a higher service fee and allow the Tasty Tuna Company to sell the canned tuna to the retailers on their behalf. This would offer the fishermen the chance to gain access to the

higher profits from selling the finished product rather than just their unprocessed fish. From the Tasty Tuna Company perspective, changing their target customer segment from retailers to the fishermen could help in a number of ways. In particular, it would change the relationship with the fishermen from one where each side had conflicting aims (e.g. fishermen want to sell their tuna at high price vs Tasty Tuna wants to buy tuna at low price), to a win-win situation where both sides want to maximize the retail value of the canned fish. There would also be a closer relationship between Tasty Tuna and the fishermen because of the increased interaction required in this type of service compared to the simple sales transaction that occurs between the two parties in the current business model. This stronger relationship could be used to encourage the fishermen to adopt more sustainable fishing practices if it could be shown that this would lead to greater profitability for the fishermen in the long term. The scope of 'sustainable fishing practices' might include:

- Adopting pole and line gear instead of purse seine or long line gear.
- Eliminating the use of Fish Aggregation Devices (FADs).
- Only fishing on healthy stocks of tuna.
- Taking measures to reduces discards and fish loss between catch and delivery to the factory.
- Adopting workers' rights policies.

This combination of measures would help to ensure a much more sustainable and secure supply of fish for the Tasty Tuna Company and would address many of the company's sustainability goals. This business model would also avoid the need to compete with rival tuna processors at the fish markets to secure the supply of tuna they need. Finally, by focussing on niche markets that are willing to pay a premium for sustainably sourced fish, the company would hopefully increase profit margins (for Tasty Tuna and the fishermen) and become the market leader in the chosen markets.

Other changes to the business model proposal were necessary to support this central idea. For example, the tuna processing service would only be offered to fishermen that paid an annual fee to become part of a member network. This membership fee would create a further incentive for the fishermen to continue dealing with the Tasty Tuna Company rather than one of its competitors and would provide recurring revenue for the company. This member network could also be the basis for a new peer to peer sales channel as fishermen would recruit other fishermen to participate in the network in order to gain economies of scale benefits. A new key activity of accounting would be required in order to ensure that the fishermen get paid the correct amount for the tuna that has been processed, distributed and sold by the company. A final point to note is that this would represent a change of strategy for the Tasty Tuna Company as the target market would be fishermen, rather than retailers and wholesalers.

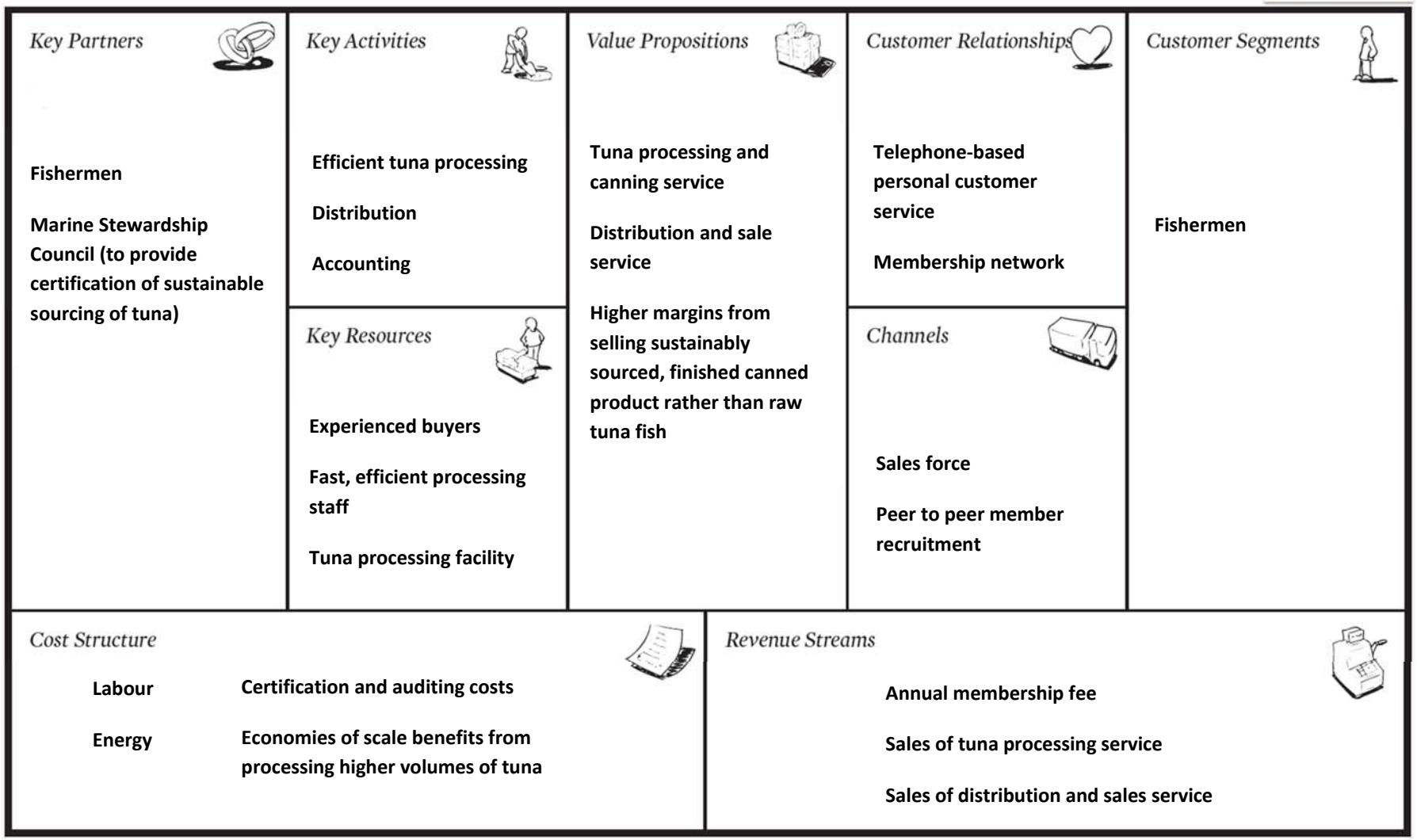



*Figure 3-3. An alternative service-based business model option for the Tasty Tuna Company.*

## 3.5.Generating ideas at the individual building block level

This section provides guidance on how to generate novel ideas within each of the building blocks of the business model canvas. If you have taken a 'Top-down' approach to business model innovation, you should already have an outline of a business model created and at this stage need to generate ideas for solutions that can help to support the implementation of your business model. In this approach, you will need to identify the building blocks that will require significant innovation at the operational level to implement, and focus on these building blocks.

If you have taken a 'Bottom-up' approach, you should refer back to the sustainability hotspots identified from the results of the *In-Depth Assessment* and focus on the relevant building blocks to address these issues. Once some interesting ideas have been generated at the building block level, you will need to return to Section 3.5 to consider how those novel ideas could be integrated into the big picture of the business model canvas.

At this point, it is worth considering which functions and people might be involved in generating and developing ideas at the operational level. In Figure 3-4 below, the main functions that are likely to appear within a manufacturing company are linked to the areas of the Business Model Canvas where they are most likely to be able to support the idea generation activity. This can help you to decide where to look for support when generating ideas for a particular block of the Canvas. This may also help to identify a Project Manager when it comes to the *IMPLEMENT* phase – this is discussed further in Section 5.3. Clearly, deciding which function or person should be involved in a project will be highly dependent on the type of project, but this figure should help you to start thinking about this important issue.

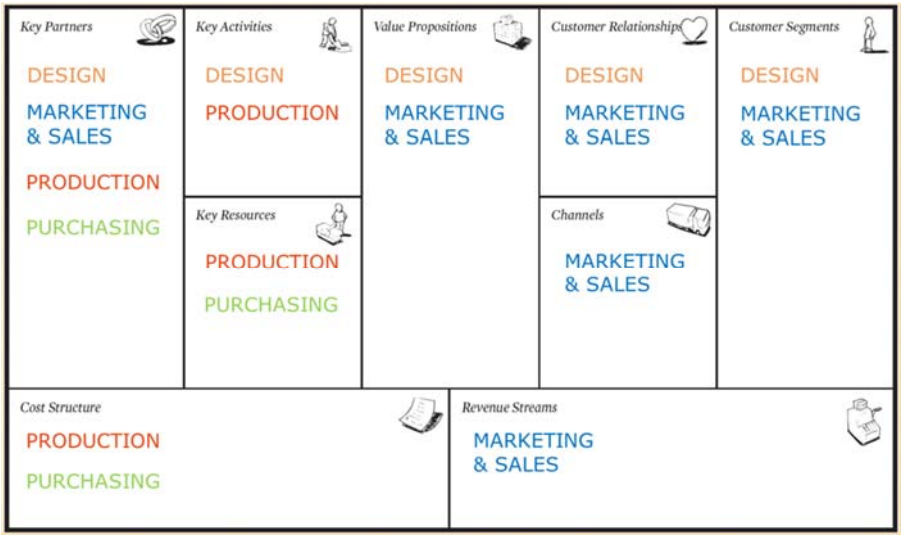
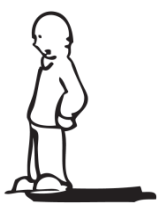



*Figure 3-4. Linking organizational functions to the most relevant blocks of the Business Model Canvas.*

### 3.5.1. Customer segments



Two fundamental questions need to be considered with respect to customer segments:

- Which customer segment(s) should we target with our products and services?
- What are the needs and requirements of our target customer segments?

The choice of target customer segments should have already been made when defining the business strategy, so you do not need to consider this further at this stage.

The ability to identify and articulate the detailed customer requirements for your chosen customer segments is a fundamental challenge for any form of innovation. For small companies embarking on eco-innovation it is particularly important as a poorly defined set of customer requirements can lead to an expensive market failure – which they cannot afford.

To build a better understanding of the needs and requirements of your customer segments, you have to engage your customers, typically through some form of market research. Figure 3-5 provides some suggestions for ways in which you might engage the COMPANY's customers, rated according to the cost and effort required to perform them, and their ability to generate customer insight.

It is worth noting that if the COMPANY's direct customer is not the final customer, or 'end user', in the value chain (e.g. one of the Tasty Tuna Company's customer segments is large international food retailers, but these customers are not the end user of the product), it may be worth also trying to engage the end user. Their views and feedback can have a significant influence on the success of an eco-innovation programme and the willingness of the rest of the value chain to engage in the programme.

| Technique | Effort | Cost | Ability to generate customer insight | Description |
|---|---|---|---|---|
| **Customer site visit** | Moderate | Low-Moderate | Moderate-Good | The advantages of a site visit are that you get to see the customer in their normal environment, which can help to ensure better quality feedback. An example of a site visit for a business customer for the Tasty Tuna Company might be going to see the warehouse facilities of a large distributor. The equivalent research activity for a private consumer for the Tasty Tuna Company might be interviewing shoppers in a supermarket (it would be good to see how the private consumer uses the product when at home but they are unlikely to invite you to their house to watch them preparing their lunch!). When dealing with business customers it can be worth asking for a tour of the customer site as this can provide a lot of useful and often unexpected insights into the customer's business and how they work. The disadvantage of site visits is that the customer may be distracted by their day-to-day responsibilities. When arranging a customer visit, it is important to emphasize that it is not a sales visit as this may help you to secure a visit (and customers are often pleased that suppliers are keen to visit them even when they are not trying to sell them something). |
| **Electronic/postal survey** | Moderate | Low | Low-moderate | A survey requires the respondent to answer a series of pre-defined questions. The fact that there is no live interaction with the customer has advantages and disadvantages. The main advantage is that it is very scalable – the survey can be sent to hundreds of customers with little effort (although response rates of 10-20% are common for market research). The disadvantage is that they are inflexible, with little or no opportunity for participants to provide context to their answers, and can be open to misinterpretation – of the questions by the participant, and of the responses by the researcher. The questions need to be very clear and well written to minimize the likelihood for misinterpretation. Questions should be reviewed and piloted before conducting the main survey if possible.<br>A good application of surveys is to validate insights gathered from other sources. For example, if a telephone interview suggested that a customer views eco-innovation as a good way to manage business risk, this idea could be validated by including a specific question on this topic in a survey. |
| **Focus groups** | **High** | **High** | Moderate-Good | Focus groups typically involve 8-12 customers participating in a group discussion led by a facilitator. The advantage of focus groups is that the highly interactive discussion can help to uncover unexpected insights. The main disadvantage is that the can be both |

| | | | | |
|---|---|---|---|---|
| | | | | time-consuming and expensive to arrange. They are often used to learn about the initial reactions of a specific customer segment to a new product or service idea. It is important to ensure that participants are recruited from the specific customer segment being targeted and that an experienced facilitator is employed to run the session. |
| **Telephone interviews** | Low-medium | Low | Moderate | Telephone interviews can be a cheap and efficient way to get information from customers. However, it can be difficult to share ideas without visual aids, and it is not possible to pick-up on non-verbal feedback from the participant. Telephone interviews can be useful for learning about a customer's general interest in sustainability and can be used as a stepping stone to gaining greater engagement from the customer. |

*Figure 3-5. Examples of customer engagement and insight gathering techniques.*

**Alternative methods for uncovering user needs and requirements**

Eco-innovation often involves a solution that represents a radical departure from the standard product, service or business model currently available in the market. In such cases it may be that the customer is not able to express their requirements effectively. This problem is neatly summarized by the quotation attributed to Henry Ford regarding the development of the automobile, who said, "If I'd asked my customers what they wanted, they would have asked for a faster horse". When searching for more radical solutions to a problem research suggests that working with 'Lead Users' can be more effective than conventional market research activities. Lead Users are defined are individuals or companies that (von Hippel, 1986):

- Face needs that will be general in a marketplace - but face them months or years before the bulk of that marketplace encounters them, and;
- Expect to benefit significantly by obtaining a solution to those needs.

Ways of identifying Lead Users include:

- Look for cases where users have developed their own prototype solution, either by modifying an existing solution or by creating something entirely new, because a commercial solution for their problem does not exist or is prohibitively expensive.
- Think about who is most likely to have 'felt the pain' of the problem you are trying to solve, because of their job or circumstances.
- Consider where users in other industries and markets may have encountered an analogous problem e.g. if you were developing a new sandpaper product for people involved in restoring furniture you might investigate how Lead Users in the aircraft refurbishment market manage to remove old paint without damaging the underlying material.
- Follow-up with any users that have contacted the company in the past to suggest ways to improve the product.
- Interview relevant experts or intensive users of your product to find out about what they consider as their biggest problems. End by asking them to provide details of another person who they think uses the product in an innovative way. Following a network of contacts like this can often quickly identify the Lead Users within a market, but is best suited to business to consumer products and services.
- Check Internet forums and social media sites for discussions about problems with your product or new features they would like to see. This approach is closely related to the Open Innovation approach in which companies actively seek ideas from outside the company.

As well as working with Lead Users to identify underlying customer needs and requirements, Lead Users can be useful when attempting to evaluate new concepts and prototype solutions. The benefit of working with Lead Users to evaluate eco-innovation ideas is that, by definition, they are aware of a need that most other users in their market have not yet realized. They also tend to be more creative and willing to experiment with prototypes in an effort to find a more effective solution. For example, the Tasty Tuna Company might choose to test a new, more sustainable packaging design for their products with a group of Lead Users that have been identified by the company as having a strong interest in the sustainability of the products they buy.

For further information on how to identify and engage Lead Users in market research see the references in Section 3.9. For further information on accurately capturing customer requirements, see Section 4.3.1.

### 3.5.2. Value proposition

The value proposition is the heart of a company's business model and so it is here that the key eco-innovation principle of Life Cycle Thinking must be embedded. This will enable the development of new value propositions that offer improved sustainability performance across the life cycle.

It Section 1.3.1 it was noted that Life Cycle Thinking is an approach that helps to understand how our choices influence what happens at each of the stages of the life cycle of a product. There are two key activities involved in Life Cycle Thinking:

1. Developing an understanding of the main contributors to the overall environmental, social and economic impacts of a product across its life cycle, from raw material extraction through to disposal at end of life.
2. Taking action to reduce negative sustainability impacts and enhance positive sustainability impacts.

Regarding the first of these aspects, the use of the *Life Cycle Thinking* tool during the *In-Depth Assessment* should have identified the key sustainability hotspots for the company. These hotspots can now be used to select the areas of the business model and/or phases of the product lifecycle to focus on.

**Generating ideas to improve the sustainability performance**

Here are some of 'golden rules' for eco-innovation idea generation:

- *Take care to avoid implementing solutions that simply shift the sustainability impacts from one phase of the product life cycle to another* – before implementing a solution it is important to consider if the total life cycle negative impacts have been reduced. This check can be performed quickly using the *Life Cycle Thinking* tool, or more thoroughly using Life Cycle Assessment.
- *Try to tackle problems at higher systems levels* – When you encounter a problem, the natural response is to try and tackle the problem at the level at which you experience it. However, reformulating a problem to consider the wider system in which the problem occurs can give much greater scope for innovation, leading to better solutions. For instance, instead of trying to reduce the energy and water consumption of a domestic washing machine, could you investigate the possibility of a community laundry service?
- *Focus your efforts on the key sustainability hotspots* – When generating ideas for ways to reduce the sustainability impacts of a product it can be very easy to become side-tracked into tackling issues that do not have a major sustainability impact. To ensure that the ideas that you generate deliver the maximum benefit in terms of reducing sustainability impacts, it is important that you take the sustainability hotspots previously identified as the starting point for your idea generation activity.
- *Enhance positive sustainability impacts as well as reducing negative impacts* – It is important not to forget that many products have some positive sustainability impacts. The Tasty Tuna Company is providing healthy, nutritious food to lots of people for example. Enhancing these positive impacts is just as important as reducing negative impacts, but is an issue that is often overlooked.

- *Try to ignore the existing solution* - Generating ideas for new eco-innovative product concepts can be challenging as the tendency will be to try to optimize the existing solution. Unfortunately, this type of small refinement of an existing product is unlikely to yield the radical improvement in sustainability performance that is the aim of eco-innovation. To help with this issue, structured idea generation tools that encourage more radical thinking can be used.

Building on this last point, here are some examples of the types of tools that can be used to support the development of new ideas for product and value propositions. Detailed explanation of how to apply each of the tools is provided in the *Tool Instructions* document.

*9 Windows on the World* - This tool provides a structured approach to analysing problems and generating new innovation ideas (O'Hare, 2010). By forcing participants to think about the problem from different perspectives, it can provide new insights into the root cause of the problem – leading to novel solution concepts. It is particularly effective in encouraging users to tackle problems at higher systems levels.

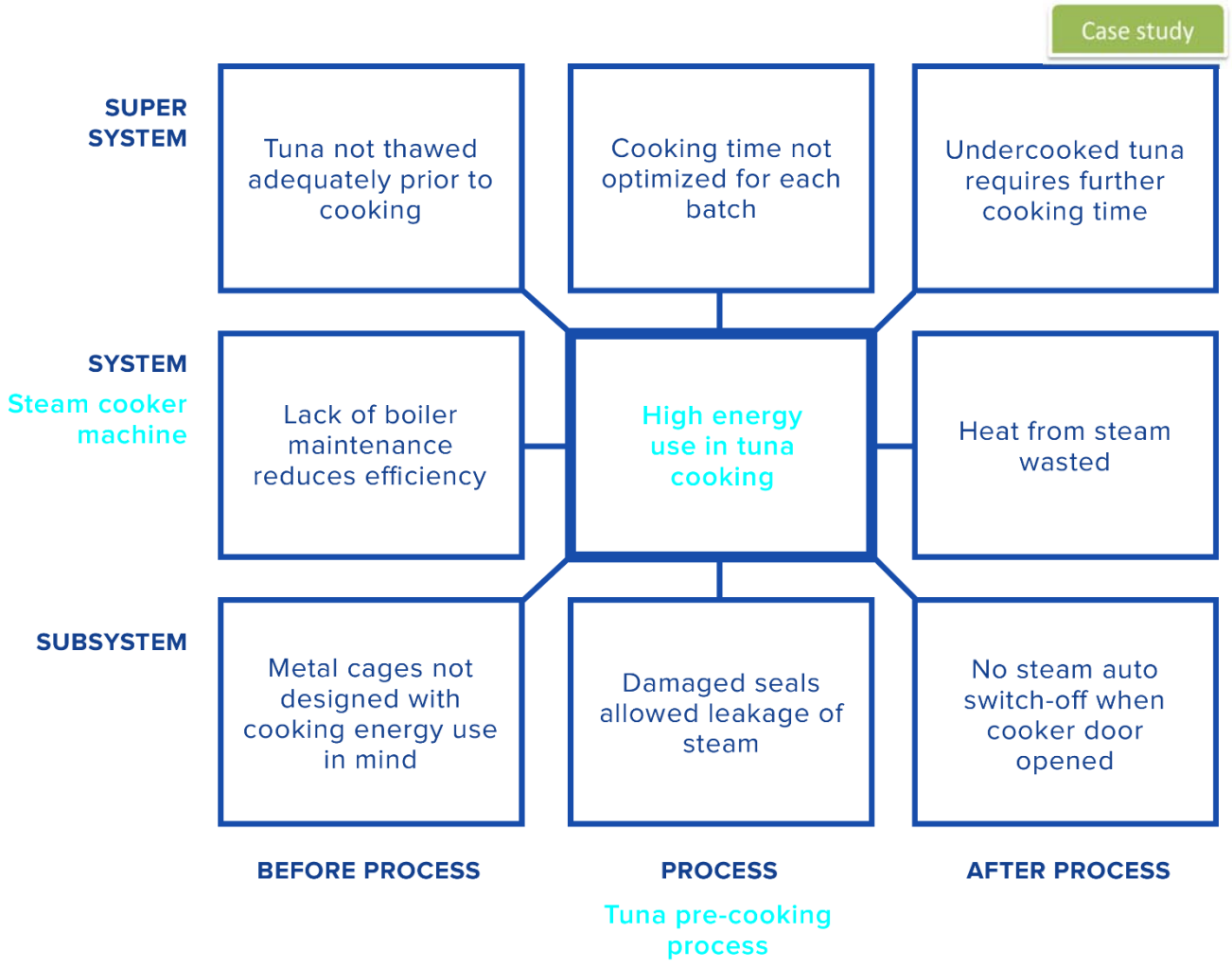



*Figure 3-6. Example of 9 Windows on the World tool for high energy use in tuna cooking.*

*Sustainable Final Result tool* – This tool encourages the user to consider an idealized, sustainable future product, and then progressively relax the constraints until a feasible product concept is reached (O'Hare, 2010). This approach is similar to the overall methodology to implementing eco-innovation presented in

this manual, but focuses purely on the product. An example of the application of the Sustainable Final Result tool to the problem of reducing by-catch in fishing is provided below.

Case study

- What is the ideal final result?
  - *Fisherman has large catch of 100% mature tuna.*
- What are the obstacles to this?
  - *Other types of fish and immature fish are caught in the fishing nets.*
- Why or how does this interfere?
  - *Other fish take up space in the nets and take time to throw-back manually.*
- Under what conditions would the interference disappear?
  - *If only mature tuna were caught in the nets.*
  - *If other species and immature could be sorted and removed automatically.*
- What resources are available to create these conditions?
  - *Tuna farming exists, which could help to keep mature tuna in separate pens.*
  - *Various types of sorting machines exist, which could potentially separate out immature fish and by-catch.*
- Has anyone else been able to solve this problem?
  - *Recycling equipment producers have solved the general problem of quickly identifying and sorting things (in their case, different types of polymer) by using Near Infrared Spectroscopy technology.*

*Product Idea Prompts* - This sheet provides examples of eco-innovation strategies, categorized by the life cycle phase for which they are most relevant. The sheet can be used in conjunction with other tools and offer some stimulus when ideas are not forthcoming.

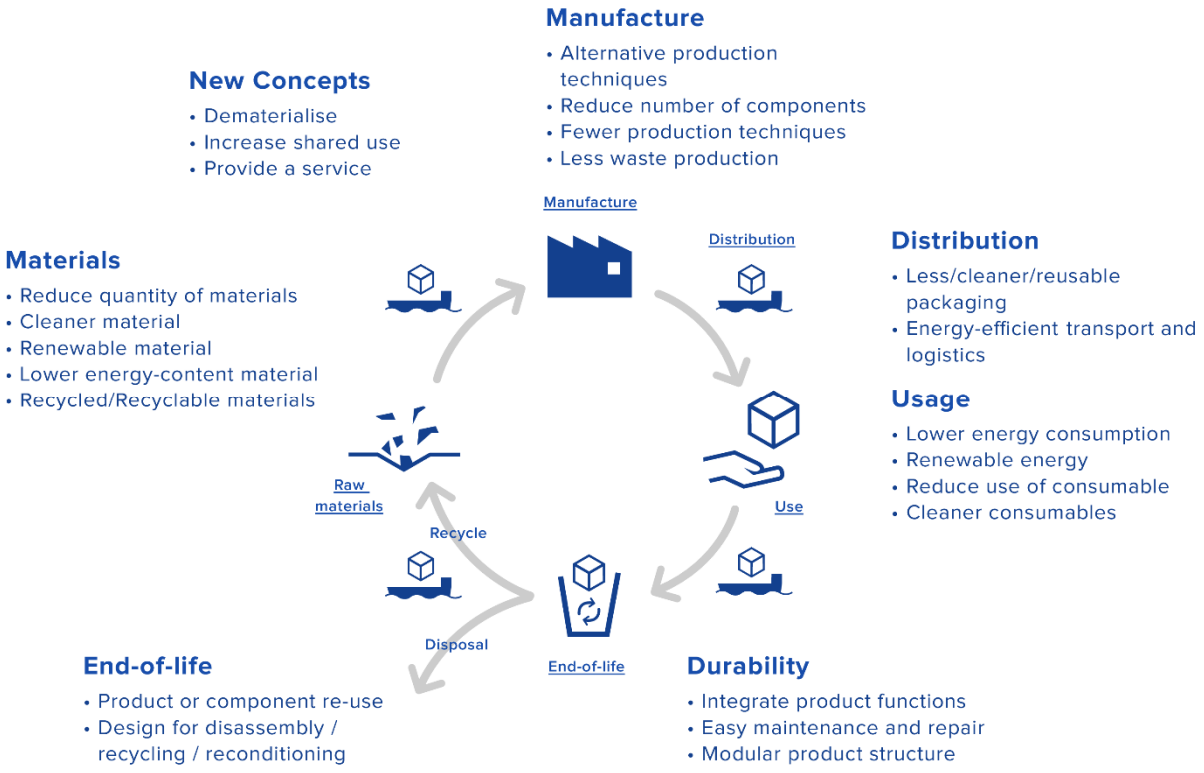



*Figure 3-7. The Product Idea Prompts.*

*People Planet Profit Diagram* – This tool requires users to list the key requirements of an existing product, and then position these requirements in terms of how they benefit the business, the environment and stakeholders such as the customer (O'Hare, 2010). From there the users must think of creative ways to modify the requirements of the product, such that it would create new benefits for the business, the environment and the customer at the same time.


*Figure 3-8. Example of a People Planet Profit Diagram for 'Canned tuna' product.*

The use of these tools will help to support your initial search for eco-innovative product ideas and value propositions. In future iterations of eco-innovation activity with the COMPANY, you should consider the possibility of building capacity within the company in topics such as Life Cycle Thinking so that the COMPANY can begin to develop their own product ideas. One of the key parts of this type of capacity building activity will be the implementation of a suitable New Product Development process in which sustainability impacts are considered from the very earliest stages. It is particularly important that these aspects are considered during the early stages of New Product Development, as it is widely claimed that up to 80% of a product's environmental impacts are determined during these early stages.

Further information on Life Cycle Thinking and implementing this type of approach within New Product Development activities is provided in the UNEP publication Design for Sustainability manual and the DTU guide to Environmental improvement through product development.

### 3.5.3. Channels

The Channels building block describes how a company communicates with and reaches its Customer Segments to deliver a Value Proposition. From an eco-innovation perspective, we can distinguish three aspects of the Channels building block where there may be scope for sustainability gains. These are marketing, sales and delivery.

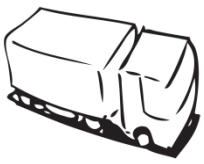
**Marketing**

The marketing function plays an important role in deciding how to market and sell the product. This is particularly important for eco-innovation because product marketing benefits can be often a key part of the business case for eco-innovation, through eco-labelling for example. However, capitalizing on these potential benefits can be tricky due to the challenge of quantifying sustainability benefits and the proliferation of eco-labels and green marketing claims, which have led to consumer scepticism in some markets. Also, making green marketing claims will often require a significant investment of time and money in order to demonstrate conformity with the requirements of an eco-label or to perform a detailed Life Cycle Assessment in order to obtain an Environmental Product Declaration. It is therefore important to establish the likely costs and benefits of pursuing green marketing claims before committing to specific marketing activities and campaigns.

Key questions to discuss with the COMPANY to help formulate a marketing strategy include:

- Are your customers interested in sustainability performance? Or are they simply interested in the potential financial or functional benefits of eco-innovative products such as reduced energy consumption?
- If claims are made about the sustainability benefits of our products, can we back them up with solid (preferably quantitative) evidence?
- Are there recognized eco-labels or sustainability standards that are relevant for our markets?
- What are our competitors saying about the sustainability performance of their products?
- Would there be business benefits from communicating our sustainability message to other stakeholders such as possible financiers, local governments or environmental lobby groups?

It is critical whenever making marketing claims about the environmental performance of a product to avoid 'greenwash' – confusing or misleading claims that attempt to highlight certain environmental aspects of a product whilst glossing over less flattering aspects. There is now a variety of good sources of information about eco-labels and the requirements for making a green marketing claim. These include the ITC Standards Map for eco-labels, an ISO standard (ISO 14020:2000) on 'Environmental labels and declarations' as well as information specifically on how to avoid greenwash. These documents, and other sources of information that provide guidance on making green marketing claims listed in Section 3.9, can you help to avoid the mistake of greenwashing.



**Sales**

For most manufacturing companies the sales activity will not make a significant contribution to the company's overall sustainability impact. It can of course have a

significant impact in terms of the economic and social sustainability of the company. The main issue to consider is the opportunities for partnerships to build new sales channels in order to access markets that were previously inaccessible. For example, the Tasty Tuna Company could partner with charities that promote sustainable fishing, such as the Marine Conservation Society, in order to gain introductions to large retailers in Europe that are interested in sourcing more sustainable fish products.

**Delivery**

The delivery of physical goods can have a significant environmental impact and economic cost. There issues are often particularly important for relatively low value, high volume products such as food or construction materials. Opportunities for innovation may exist in the following areas:

- **Packaging** – Reducing the mass of packaging reduces resource consumption and fuel consumed in transportation. The design of tertiary packaging for reuse vs single use (and recycling) is often a significant issue to be considered. A good example of packaging innovation for sustainability is provided by the Eco2Distrib case study described in the accompanying publication *The Business Case for Eco-innovation* (UNEP, 2014).
- **Warehouse impacts** – Heating or cooling systems and lighting at warehouse facilities can be a major source of energy use with significant scope for improvement.
- **Logistics optimization** – Effective scheduling can reduce the distance that goods are transported leading to fuel savings. Opportunities for back-hauling, whereby the vehicle that has delivered a load from A to B is used to transport a different load back from B to A should also be investigated.

- **Product damage in transportation** – Product damage or loss during transportation is sometimes accepted as a necessary overhead, but this need not be the case. Causes might include poor packaging, poor handling or poor temperature control (particularly for food products).

### 3.5.4. Customer relationship

Eco-innovation offers a variety of opportunities to enhance the relationship between the company and the customer. These are often linked to changes to the value proposition which can provide an increased frequency and quality of contact points with the customer. For example:

- A ‘product/service system’ business model requires the customer to pay for an on-going service (for the use of a product), instead of a one-off transaction to purchase the product. This provides many more opportunities to engage with the user to offer new services and gather feedback. For example, the machinery supplier to the Tasty Tuna Company might offer a product/service system for its steam boiler equipment that would involve the Tasty Tuna Company paying a fee for each tonne of tuna cooked using the equipment instead of purchasing the equipment itself. This would allow the supplier to offer other added value services such as maintenance and energy use optimization services.
- A product take-back scheme for end of life products may require the customer to contact the company to arrange the collection and recycling of the product. This provides an opportunity to gather feedback on the customer’s level of satisfaction and perhaps offer the customer a discount on a new model.

- A longer term engagement with customers can be encouraged through the creation of a 'customer sustainability board', particularly when dealing with business-to-business customers. This board can be formed from a small group of motivated customers that have some interest in supporting the COMPANY to improve their sustainability performance. The board should meet once or twice per year to find out about the activities the COMPANY is undertaking to improve its sustainability performance and provide feedback and suggestions for how the COMPANY could improve its performance. This type of external review can be very helpful in ensuring that the eco-innovation activities of the COMPANY are aligned with the interests of the customer and stay on track during the long process of implementation.

### 3.5.5. Revenue streams

Innovation in the revenue streams building block will generally be closely linked to innovations in the value proposition block - changing one of these will affect the other. One of the key trends in business model innovation has been the interest in switching from transaction revenues (customer pays for a product in a one-off payment) to recurring revenues (customer makes regular payment or subscription for continued usage of the product or for additional services). Notable examples include:

- **Office printers** – Where the customer now has the option to pay a monthly subscription for the use of the machine instead of purchasing it outright. The subscription fee includes maintenance and service costs and varies depending on the number of pages they print.
- **Jet engines** – Where the customer pays for the number of hours that the engine is flying and the engine manufacturer takes responsibility for maintenance and servicing.
- **Digital music** – Where the customer can have unlimited access to a vast collection of songs and albums to listen to for as long as they remain subscribed to the service.
- **Chemical leasing** – Where, for example, the customer might pay for the service of 'part cleaning', rather than for the number of litres of solvent used in the cleaning process.

Many of these business model innovations have significant customer benefits (e.g. reduced capital expenditure requirements, wider choice, greater flexibility etc.), but such business models can also have significant sustainability benefits, as well as offering a competitive advantage for the manufacturer.

Sustainability benefits can arise from the fact that the recurring revenue streams in this type of business model often relate to the use of a product or its servicing and maintenance. An increase in revenue for the manufacturer is no longer tightly coupled to the consumption of more resources to produce new products. This can help to encourage efficient use of the product or prolong its useful lifetime and creates an incentive for manufacturers to support the customer in gaining maximum value from each physical product. Social benefits can also occur through the creation of new jobs in repair, maintenance and customer support roles that are required to deliver the new services.

Examples of how a focus on recurring revenues could be implemented in the Tasty Tune Company include the proposal made in Section 3.4 for the transition to a new business model based offering a tuna processing and distribution service for fishermen that would require them to pay an annual fee for membership of the network. There is also the example provided in Section 3.5.4 of the machinery supplier that could offer the Tasty Tuna Company the option to pay a monthly fee for the usage of their machines which would include maintenance and servicing.

When considering the options for new revenue streams for the COMPANY, there are a number of common areas to consider:

- **Maintenance contracts and service fees** – performing regular maintenance and service operations can help to ensure optimal performance of a product and that it will reach its design lifetime. As the manufacturer of the product, the COMPANY should have the right skills and knowledge to offer this service (although being able to deliver these services cost-effectively to the customer is likely to involve a new set of challenges and so requires careful consideration and planning).
- **Training** – helping the customer to get the most value out of their product by providing training courses can lead to higher customer satisfaction and at the same time can provide a useful revenue stream for the COMPANY.
- **Licensing** – for companies that hold significant intellectual property, the option to license the use of that intellectual property to a third party can be a low effort way to generate new revenue streams. Careful consideration must be given to the strategic implications of licensing partnerships. For instance, could it lead to new competition within the COMPANY's core customer segments? Could it involve a loss of control of the brand leading to loss of brand value?
- **Advertising** – the communications channels that the COMPANY has built with their customers can be valuable to third parties if they can be used for advertising. This is the foundation of the 'multi-sided platform' business models discussed in Section 3.4. Again, careful consideration needs to be given to the impact of advertising on the overall business to avoid unintended consequences. For example, will the presence of adverts annoy or alienate the COMPANY's target customer segments?

The other aspect to consider within the revenue stream building block is that of pricing. The main challenge of pricing from an eco-innovation perspective is that if you intend to develop a new or significantly different value proposition, then it can be difficult to get the right pricing strategy. Deciding on a price and pricing strategy for a product is a topic discussed extensively in other literature (e.g. Gregson, 2007), but one tip that is useful when dealing with business to business customers is to ask them how they would make the business case to their management team for purchasing the product. By getting a better understanding of the potential cost savings or increased revenue the customer is likely to benefit from, you can make a more accurate estimate at the price that will be acceptable to them.

### 3.5.6. Key resources

The first step towards innovation in the key resources building block is recognising what the key resources are for the COMPANY. To help you identify key resources in the COMPANY, think about the following four categories of resource (with examples for the Tasty Tuna Company):

- **Physical** – Physical assets such as manufacturing facilities and buildings, and the materials required to make the product (steam boiler equipment, tuna fish, tin cans).
- **Intellectual** – Can include brands, industrial know-how, patents, customer databases etc. (Tasty Tuna Company brand name, tomato sauce recipe for use with tinned sardines).
- **Human** – People who are particularly important to the success of the company (fish buyers, production staff that are skilled at loining tuna).

- **Financial** – Access to financial resources through financial guarantees, cash savings, or lines of credit (low interest government loan to fund research and development).

Once you have identified the COMPANY's key resources, you can begin to think about issues such as: do the key resources the company possess offer a competitive advantage? For example, a workforce that is skilled at tuna loining would provide the Tasty Tuna Company with the advantage of reduced time and fish loss in the loining process. How can the resources be exploited more effectively to enhance the competitive advantage? Is there a risk that the key resource may not be available in the future? How can this risk be reduced or mitigated?

For example, the Tasty Tuna Company is extremely dependent on a supply of fresh tuna as a key resource. This supply is under threat due to overfishing. One way to mitigate this risk would be to lobby the local government to create and enforce fishing quotas. This would offer an environmental benefit by protecting the fish stocks, whilst also providing a more secure future for the company and the local fishermen.

An interesting area to explore in future iterations of the eco-innovation programme will be staff development and training. As mentioned previously, training on topics such as Life Cycle Thinking or Cleaner Production can be a very good way to support the development of future eco-innovations. This type of training may not be appropriate as a first project as it can take some time for the benefits of training in eco-innovation topics to be realized and should therefore be more of a long term objective.

### 3.5.7. Key activities

Beyond the development of new value propositions, dealt with in Section 3.5.2, the key activity of most relevance for eco-innovation is that of production processes, as production can be a major contributor to the life cycle sustainability impacts of a product. Many readers will already have significant experience of Resource Efficiency and Cleaner Production, therefore the aim of this section is to introduce some tools and considerations which may offer fresh insights and ideas for both the Service Provider and the COMPANY.

A good starting point for improving the sustainability performance of production processes is with conventional material flow and energy analyses. Some amount of Input Output Analysis data on energy, water and material flows should have been gathered as part of the *In-Depth Assessment,* but it may be necessary to enhance these data with further data at the level of individual production processes in order to obtain a more detailed breakdown. This type of analysis can be useful to identify and quantify the major flows that occur during the production processes and the sources of waste and emissions. Detailed guidance on how to perform material flow and energy analyses is provided in the UNEP 'Promoting Resource Efficiency in SMEs resource kit' (PRE-SME).

Once you have identified the most significant material, energy and monetary flows and any specific problems within the production system you can use these data to focus your efforts in searching for ways to reduce the environmental, social and economic impacts of these flows. To help generate innovation ideas systematic approaches such as the *9 Windows on the World* tool can be employed. A detailed explanation of how to apply the *9 Windows on the World* tool is provided in the *Tool Instructions* document.

One of the key principles of the *9 Windows on the World* tool is extending the scope of the problem. In some instances, this may mean looking beyond the production processes that take place within the COMPANY, into the wider value chain. For example, if The Tasty Tuna Company would like to address the problem of chemicals leaching from the plastic coating of the tin can they could ask their can supplier to identify alternative coatings with reduced Bisphenol-A content. Taking a wider systems perspective, they could also investigate their distribution operations and the activities of the retailer to understand why tins get dented (which damages the coating and enhances the release of chemicals from the coating). Alternatively, they could commission a local technical university to investigate alternative packaging materials such as foil/plastic laminate pouches, which do not need the same type of internal coating that is prone to leaching of chemicals.

These examples demonstrate why it can be useful to try to engage suppliers, customers and other partners in the search for opportunities for eco-innovation within production processes. The following sub-section provides further advice on this topic.

### 3.5.8. Key partnerships

In Section 1.3.3, the need for you as a Service Provider to develop general partnerships in order to be able to provide a comprehensive eco-innovation service to the COMPANYs was discussed. At this stage, the focus is on the specific types of partnership that the COMPANY can develop to support their eco-innovation activities. Here the focus is on partnerships with suppliers.

Suppliers, of both physical goods and services, often have a very direct contribution to the sustainability performance of a company's products. In recent years there has been an increase in instances of sustainability requirements being passed down through a supply chain. In some cases this may be part of a sustainable procurement policy initiated by one or more of the higher level customers due to growing consumer demand, resource constraints or legislation, such as restricted substances regulations as well as perceived benefits from sustainability. To encourage eco-innovation it is not enough to simply pass on customer requirements. More wide ranging discussion between the COMPANY and their suppliers needs to take place so that both sides can contribute their knowledge and insight to identify opportunities for improvement.

The willingness of suppliers to engage in eco-innovation activities will be highly dependent on the context. For instance, a small company purchasing materials from a large multi-national will likely struggle to get engagement from that supplier, because they represent a very small fraction of the supplier's revenue stream and often there will be intermediary distributors between the COMPANY and the multi-national supplier. There is a variety of other challenges that you many encounter when trying to engage value chain partners in eco-innovation activities. Some examples are listed in Figure 3-9, along with possible strategies to facilitate the partner engagement.

| CHALLENGES | POSSIBLE STRATEGIES |
|---|---|
| *Initial engagement*<br>• Knowing which organizations (or group of organizations) to engage.<br>• Making contact with the right person in the organization.<br>• Language barriers. | • Perform a stakeholder mapping and develop an engagement strategy for the different types of partner.<br>• Begin by engaging large companies that may have more influence over the supply chain.<br>• Identify the partners that are already pro-actively addressing sustainability issues.<br>• Work with trade associations, small business associations, free economic zones or eco-industrial parks that can help you to engage large groups of companies that are facing a common sustainability challenge. Where trade associations do not exist, encourage the formation of ad-hoc consortia or business clubs to tackle specific issues.<br>• Dedicate time and effort to developing your personal network of contacts in the industry. |
| *Developing the collaboration*<br>• Explaining the business case.<br>• Convincing senior management at the partner organization.<br>• Ensuring protection of intellectual property for all parties.<br>• Reluctance to take a risk.<br>• Buyers not recognizing the long term benefits of sustainability initiatives. | • Take time to think about and clearly articulate the business case for collaboration from the perspective of the partner.<br>• Build up a collection of successful case studies of value chain collaboration that demonstrate the business benefits.<br>• Try to understand the sustainability challenges faced by your partners and generate ideas for solutions that create a win-win scenario.<br>• Organize a seminar where companies facing a common challenge can discuss ideas how to overcome those challenges.<br>• Start with small-scale, low investment collaborations with a new partner. Success on small projects can lead to the trust and confidence required for larger projects.<br>• Make sure intellectual property is protected on all sides by signing a mutual non-disclosure agreement – see references for further details in Section 3.9.<br>• Offer training to buyers throughout the value chain to help them understand the importance and benefits of engaging in sustainability initiatives and making sustainability issues part of their buying criteria. |
| *Implementation*<br>• Differences in priorities.<br>• Lack of trust and transparency.<br>• Different ways of thinking and working.<br>• Cultural differences.<br>• Lack of guidance – no obvious process for how to work together. | • Make sure that the aims and objectives of the collaboration from all sides are clearly expressed from the start. This will help to ensure alignment of priorities.<br>• Take time to learn more about the organizations you collaborate with and the key personnel you are working with to help build a better understanding of their viewpoint, culture, ways of working etc.<br>• Make sure that key technical details of a proposed solution are clearly captured using a 'requirements specification'. Guidance on how to write an effective requirements specification is provided in Section 4.3.1.<br>• A process for supplier engagement, with a particular focus on managing supply risks related to raw materials, is provided in Section 3.9. |

*Figure 3-9. Examples of the common challenges to engaging value chain partners and strategies to help facilitate engagement.*

Further advice on how to engage value chain partners in eco-innovation activities that have a strong technology focus is provided in the publication *Moving ahead with technology for eco-innovation* (UNEP, In press).

Case study

For the Tasty Tuna Company, one of the most important challenges the company faces is the sustainability of their supply of fresh tuna. Specifically, there is pressure to ensure that the local tuna stocks are not overfished, and that what fishing that does take place has minimum impact on the marine eco-system by limiting by-catch and physical damage to the environment. Addressing this issue will require close collaboration with the fishing community from whom the Tasty Tuna Company buy its tuna. The business model option proposed in Section 3.4 for a tuna processing, distribution and sales service could provide an opportunity to initiate this type of partnership. Tasty Tuna could propose to the fishermen that if they transition to more sustainable fishing methods, they will be able to achieve higher sales revenues for their tuna and that the Company will support this by targeting large international retailers with strong sustainable procurement policies. This type of initiative may need support from a third party, such as the local fisheries agency, to provide guidance to the fishermen on the types of fishing method and quota that would be considered sustainable and to ensure that any voluntary agreements put in place are adhered to by all parties.

### 3.5.9. Cost structure

All companies want to reduce costs, but the need to understand and reduce the costs associated with operating a business model is more important for some models than others. 'Value-driven' companies focus on providing a high quality value proposition in return for a premium price and can therefore afford to spend more in order to generate higher revenues. Luxury hotels are a good example of a value-driven business model. At the other end of the spectrum are 'cost-driven' business models, such as 'low cost airlines'. Most companies will fall somewhere between these two extremes.

For cost-driven companies, you should explore ways to reduce operating costs. Resource efficiency projects, as discussed in Section 3.5.7, can be a good starting point for this. It is also important to look for new 'economies of scale' or 'economies of scope' benefits that could be developed. Economies of scale benefits are reductions in the cost per unit of production that occur as the number of products produced increases for a single type of product i.e. through 'bulk purchase' discounts from suppliers. Economies of scope benefits relate to reductions in the cost per unit of production that occur as the number of products produced increases across two or more product lines i.e. one marketing team can support multiple product lines without a significant increase in cost.

Case study

As an example, the Tasty Tuna Company may be able to begin producing tinned sardines using most of the same cooking and canning machinery, producing this new product at weekends when the production line is not normally in use for tuna processing. If feasible, this would lead to economies of scope benefits because a new product line and revenue stream could be created without major investment in new machinery. From a sustainability perspective, care must be taken when proposing opportunities for economies of scale benefits not to generate negative environmental or social impacts e.g. problems of large scale, intensive monoculture in crop growing and analogous problems in intensive fish farming.

## 3.6.Evaluating and selecting a business model

Once a variety of business models have been proposed the next steps are to evaluate the options and select the best one to proceed with. The following sub-sections will take you through these two steps.

### 3.6.1. Business model evaluation

Having generated a variety of business model options the next step is to evaluate each of the options. The aim is to filter out any options that are not suitable or feasible and create a shortlist of the best options available. It is useful to get input from the Focal Point (and other relevant COMPANY employees if possible) at this time as they can provide a more objective assessment of the options you have generated and help you to complete the evaluation process.

The basic criteria to consider during the evaluation process are:

- What are the potential **benefits** (economic, environmental and social)?
- What are the likely **costs** involved in implementing this business model in terms of investment of time, money and effort?
- What are the **risks** involved?

**Evaluating benefits**

The potential benefits of each business model option should be captured using the *Life Cycle Thinking* tool template. Within this template, the benefits in terms of the six sustainability metrics can be detailed for each phase of the life cycle. The aim should be to assess the benefits in each cell of the matrix, providing some quantification where possible. An example is provided in Figure 3-10 below.

| | Raw Materials | Production | Transportation | Use | End of Life |
|---|---|---|---|---|---|
| Material and water intensity | *Fishermen have incentive to transition to sustainable fishing methods as they will directly benefit through higher prices for their finished product.* | - | - | - | - |
| Energy intensity | - | *Member network fees can be used to invest in energy and cost saving measures.* | - | - | - |
| Health & Toxicity | - | - | - | - | - |
| Other social | *Fishermen's cooperative can be utilized to improve working conditions on boats.* | - | - | - | - |
| Profitability | *Profits isolated to some extent from fluctuations in wholesale cost of tuna.* | *Recurring revenue of €50,000 if 100 fishermen join member network at €500/year. Gross profit of €160,000 per year (based on 500 tonnes of tuna sold).* | - | *Expect to achieve 10% price premium for sustainably sourced fish by targeting responsible retailers.* | - |
| Job creation and security | *More secure and well-paid jobs for fishermen by distributing profits more evenly.* | *Recurring revenues and higher profit margins will improve job security for our staff.* | - | - | - |

*Figure 3-10. Using the Life Cycle Thinking tool to evaluate the 'fish processing and distribution service' business model option.*

**Evaluating costs**

When considering the costs involved in implementing a business model it is worth considering two aspects. First, there are the monetary costs, which you should attempt to list and estimate. The level of detail and precision in these figures may be quite low at this stage but you should aim to assess the approximate costs of major items that will require an initial investment by the COMPANY, such as:

- labour costs in designing new products or processes
- labour and material costs for prototyping the new solution
- purchasing new production equipment or facilities
- employing new staff (sales, marketing, research or production
- training staff in new procedures

The second aspect to consider is the effort required to implement the new business model. This is important to consider because some business model options may simply require too much effort to implement. Also, if you have a choice between two business model options that are identical in terms of likely benefits, risks and economic costs, the deciding factor would be the effort to implement them.

Understanding the effort required to implement a new business model requires an understanding of the gap between how the company performs today and how it needs to perform to successfully implement the business model, across all areas of the company. Identifying these performance gaps can be done systematically by reviewing each of the Business Model Canvas building blocks and identifying issues where the new business model requires the company to operate in a way that is new or different. The baseline data for comparison should be available from the *In-Depth Assessment* tool. Each of the Business Model Canvas building blocks should be rated using the following scale:

> **--** A key activity, capability, channel or resource required for the new business model is not present or is significantly below the performance required.
>
> **-** A key activity, capability, channel or resource required for the new business model is present but is below the performance required.
>
> **+** A key activity, capability, channel or resource required for the new business model is present and meets the performance required.
>
> No symbol against a point means that no change is required.

Figure 3-11 shows an example of this type of assessment applied to a business model option for the Tasty Tuna Company, with performance gaps highlighted in yellow.

Case study

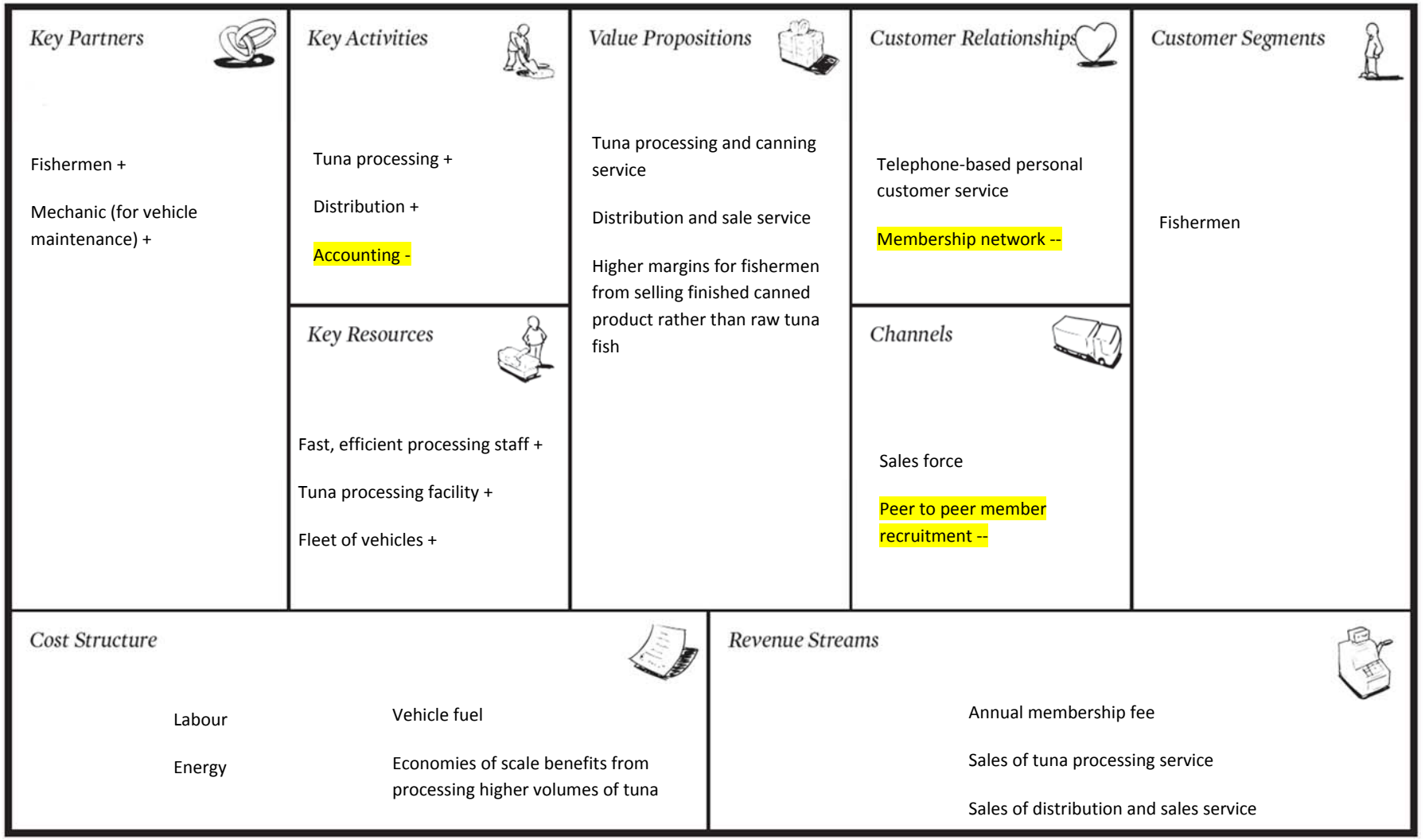



*Figure 3-11. Evaluation of the performance gaps for the proposed business model.*

**Evaluating risks**

An important part of the role of the Service Provider is to provide the COMPANY with the motivation and confidence to make bold choices to make rapid progress towards a more sustainable future. However, this should not be based on uncalculated risks. Therefore, it is important to ensure that actions are being taken to identify and manage all possible risks. For this task, a *Risk Register* can be used to structure an exercise to become aware of all related risks and define potential corrective actions, where necessary.

Risks can be identified through a combination of prior experience, the COMPANY's own scepticism, and by conducting a brainstorming session. A good starting point for such a brainstorming activity is to review the risks the company will face if it continues with the current business model. This can be a useful reminder for senior management of the drivers for change.

Once a list of risks is identified, the *Risk Register* is filled out in a structured manner. The example in Figure 3-12 shows a sample *Risk Register*, with some potential risks filled in for the Tasty Tuna Company. The *Risk Register* template contains a number of fields, which should be filled in on a complete row-by-row basis, for each requirement. Detailed instructions on how to complete the *Risk Register* template is provided in the supporting materials in the *Tool Instructions* document.

In terms of mitigating risks, one of the activities you can do is to test out some of the assumptions that appear in the business model options. One of the most important building blocks to test is the Value Proposition block as if your target customer groups do not value your product or service the business model will fail. For example, if the Tasty Tuna Company wanted to test the assumption that fishermen would be willing to pay for a tuna processing and distribution service they could perform interviews with several of the fishermen that are currently their suppliers to discuss this idea. This activity would require some time and effort to implement, but it is far better to make this small investment at this stage, than commit to a whole scale change in business model only to find that your assumptions were incorrect.

In some cases, testing the value proposition is not so simple. The problem is that people often fail to recognize the potential value of a solution. This may be because they have not yet identified for themselves the real significance of the problem that the innovation addresses. Alternatively, it may be that they are so used to purchasing their normal solution that they struggle to understand how an alternative solution could be more effective. This is another issue where it can be useful to engage Lead Users, as they are better able to recognize the value of a highly novel solution. Advice on how to identify and engage Lead Users is provided in Section 3.5.1.

Case study

| Risk Register for: Tasty Tuna Company<br>*Cooperative business model proposal* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Risk code and name** | **Impact description** | **Prob-ability (1-3)** | **Impact (1-3)** | **Risk score** | **Mitigation** | **Contingency** | **Action date** | **Action by** |
| Risk01<br>Tuna caught illegally | Product removed from market.<br>Loss of reputation.<br>Fine or imprisonment.<br>Loss of key suppliers. | 2 | 3 | 6 | Work with licensed fishing companies and ask to see evidence of quota compliance. | Work with a variety of fishing companies, at least for first 2 years. | 14/01/15 | Mr. Tasty |
| Risk02<br>Fishermen not willing to join cooperative | Loss of revenue.<br>Loss of key suppliers. | 1 | 3 | 3 | Hold meeting with senior fishermen to explain risks of business as usual approach and benefits of cooperative model. | Continue to offer current transactional business model during transition period to maintain revenue if uptake is slow. | 22/02/15 | Mrs. Tuna |
| Risk03<br>Customer rejects product | Poor product sales. | 1 | 2 | 9 | Carefully planned marketing campaign | Prepare a list of FAQ's and answer all possible questions from customer's well in advance | 23/06/15 | Mr. Tasty |
| Risk04<br>Customer misunderstands the project as green-washing | Poor product sales.<br>Loss of reputation. | 2 | 3 | 6 | Consider creating a parallel brand for the product, so as not to confuse or endanger the existing brand | Be prepared with detailed environmental product declarations beforehand | 14/08/15 | Mrs. Tuna |

*Figure 3-12. Example of the Risk Register completed for the Tasty Tuna case study.*

### 3.6.2. Selecting the best option

The final activity in this phase is to select the best business model option to proceed with. Selecting a business model is a complex decision that will require input from the Senior Management Team to build a consensus.

**Creating an evaluation summary**

To enable the selection of the best business model option, it can be useful to provide a summary of the evaluation you have performed using the *Business Model Evaluation* tool. The tool brings together in one document information on each of the key metrics for evaluating the business model options. An example is provided below in Figure 3-13.

Whilst the matrix provides a useful summary, it is important that the senior management team also familiarize themselves with the detailed data that you have gathered and collated in compiling the matrix so that they can provide rigorous critical review and come to an informed decision. You should therefore circulate this information to the Senior Management Team well in advance of organizing the meeting to decide on the best business model option.

Case study

| | Metric | Current situation | Option 1 | Option 2 | Option 3 |
|---|---|---|---|---|---|
| BENEFITS | Energy intensity | 2 | 3 | 5 | 3 |
| | Material and water intensity | 2 | 4 | 4 | 3 |
| | Human health and toxicity | 2 | 2 | 1 | 2 |
| | Other social issues | 2 | 2 | 2 | 3 |
| | Profitability | 2 | 3 | 4 | 3 |
| | Job creation and security | 2 | 1 | 2 | 2 |
| RISKS | Long term risk (after mitigation actions and successful implementation) | 2 | 4 | 4 | 3 |
| | Implementation risk (High/Medium/Low) | (None) | Medium | High | Low |
| COSTS | Upfront capital investment (state cost estimate) | (None) | € 15,000 | € 74,000 | € 3,000 |
| | Implementation effort (High/Medium/Low) | (None) | Medium | High | Low |

*Figure 3-13. Example of the Business Model Evaluation tool completed for the Tasty Tuna case study.*

**Presenting your evaluation to Senior Management**

Guidance on what to include in your presentation to the present the Senior Management Team is provided in the box below.

***Key points for presenting the new business model options to Senior Management***

Management milestone

- The business model options you have developed, including details of the operational level ideas that will support the implementation of the business model.
- The main economic, social and environmental benefits of each option.
- The economic costs in terms of the major initial investments required.
- The effort required to implement each business model option, presented using the Business Model Canvas and the rating scale described in the previous section.
- The main risks associated with each option, including details of any experiments you have done to validate key assumptions.
- Provide a summary of the above using the *Business Model Evaluation* tool.

The final decision to select a business model may take some time and may require you to revise some of the details of the options or perform further testing of assumptions. Throughout the decision-making process, it is important that you provide encouragement to guide the COMPANY towards a more profitable and sustainable business model.

## 3.7.Checklist

| **SET BUSINESS MODEL phase** | (Tick when complete) |
|---|---|
| Have you completed an *In-Depth Assessment*, covering all areas of the company's strategy, business model and operations? | ☐ |
| Have you delivered a report to the COMPANY summarizing the findings of the *In-Depth Assessment*? | ☐ |
| Have you generated a range of business model options and supporting project ideas by applying the Business Model Canvas and other eco-innovation tools? | ☐ |
| Have you evaluated the business model options and facilitated the selection of a preferred business model? | ☐ |
| Have you obtained Senior Management agreement on the preferred business model? | ☐ |

## 3.8.Supporting tools

The following tools are relevant for this section of the manual. Details of how to apply the tools and templates are provided in the *Tool Instructions* document.

*In-Depth Assessment tool*

**Description:** A set of questions covering the key aspects of the company that help the Service Provider to understand the current situation for the company, the opportunities for eco-innovation and how the situation may evolve in the future.
**Who?:** This tool is for use by the Service Provider.
**When?:** During the SET BUSINESS MODEL phase.
**Inputs:** Wide variety of data and information about the company.
**Outputs:** Holistic understanding of the company's current situation and the opportunities for eco-innovation, which is used to inform the business model innovation activity.

*Life Cycle Thinking tool*

**Description:** This exercise will help you to identify the sustainability hotspots across the life cycle of the COMPANY's products. Participants are first asked to list environmental, social and economic sustainability issues that occur at each phase of the product life cycle. These issues are then placed into categories and the hotspots are noted.
**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with between 2 and 6 key representatives from the COMPANY.
**When?:** The Life Cycle Thinking template is used in the *In-Depth Assessment*, and as part of the idea evaluation process during the SET BUSINESS MODEL phase.
**Inputs:** Environmental, social and economic sustainability issues related to the life cycle of the COMPANY's products.
**Outputs:** Identification of the sustainability hotspots that occur across the life cycle of the product, which can inform the *SWOT* analysis and be used as the starting points for generating new innovation ideas that address these hotspots.

*Business Model Canvas*

**Description:** The business model canvas supports the business model innovation process by providing a simple, visual representation of a business model, consisting of 9 'building blocks' that describe the key features of how the business works.

**Who?:** This tool is intended for use by the Service Provider working alone or as a workshop exercise with two to six key representatives from the COMPANY.

**When?:** During the SET STRATEGY phase to capture the COMPANY's current business model and during the SET BUSINESS MODEL phase to support business model innovation

**Inputs:** Details of the business strategy as well as the sustainability threats and opportunities faced by the company.

**Outputs:** Alternative business model options that have a strong focus on improved sustainability performance.

*9 Windows on the World*

**Description:** This tool provides a structured approach to analysing problems and generating innovation ideas. By forcing participants to think about the problem from different perspectives, it can provide new insights into the root cause of the problem – leading to novel solution concepts.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.

**When?:** During the SET BUSINESS MODEL phase to generate product innovation ideas and during the IMPLEMENT phase to help solve problems.

**Inputs:** A specific sustainability problem or inefficiency that you would like to address.

**Outputs:** Innovation ideas to address an identified sustainability problem.

*Sustainable Final Result tool*

**Description:** This tool encourages participants to describe a solution that has all of the desired benefits of the original product and none of the unsustainable aspects, without worrying about the feasibility of creating such a solution. By starting at this ideal (but unreachable) state, participants can then take small steps back until they reach a more feasible solution idea.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.

**When?:** During the SET BUSINESS MODEL phase, when searching for innovation ideas..

**Inputs:** A product-related sustainability problem or inefficiency that you would like to address.

**Outputs:** Innovation ideas to address an identified sustainability problem.

*Product Idea Prompts*

**Description:** Simple list of prompts that encourage the user to consider the full life cycle of the product when generating innovation ideas for new product concepts. This tool can be used in conjunction with other tools to offer some stimulus when ideas are not forthcoming.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.

**When?:** During the SET BUSINESS MODEL phase.

**Inputs:** A product-related sustainability problem or inefficiency that you would like to address.

**Outputs:** Innovation ideas to address an identified sustainability problem when searching for new product ideas.

*People Planet Profit Diagram*
**Description:** The People Planet Profit Diagram is used to generate ideas for new products and services or ways of marketing those products by describing the requirements of each of the three main stakeholders and then thinking about how the changes that would be necessary to the system to make conflicting or contradictory requirements become more aligned.
**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.
**When?:** During the SET BUSINESS MODEL phase.
**Inputs:** A set of requirements for an existing product or service.
**Outputs:** Innovation ideas that benefit people, the planet and are profitable for the company that can be used to define a new value proposition for an eco-innovative business model.

*Risk Register*
**Description:** This tool provides a structured approach to anticipating and prioritizing all possible risks connected with an eco-innovation business model or innovation idea. Furthermore the tool helps the user to define preventive and corrective actions, where necessary.
**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.
**When?:** During the set SET BUSINESS MODEL phase and during the IMPLEMENT phase.
**Inputs:** An eco-innovation business model or innovation idea that has been chosen for implementation.
**Outputs:** A prioritized list of risks along with mitigation options that can be used to identify and evaluate the risks associated with a business model proposal or help manage risks within the implementation of a project for eco-innovation.

*Business Model Evaluation*
**Description:** This tool is intended to assist in the selection of a new business model by providing a summary of key evaluation metrics for all the business model options being considered.
**Who?:** This tool is intended for use by the Service Provider.
**When?:** During the SET BUSINESS MODEL phase.
**Inputs:** Data concerning the benefits, costs and risks of implementing each of the new business model options.
**Outputs:** A relative scoring of each of the business model options against a variety of indicators of the benefits, costs and risks of implementing each of the new business model options that can be used as part of the business model evaluation process.

## 3.9.References and resources

Business Model Canvas:

Osterwalder, A., & Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. Wiley, London.

The Business Model Canvas can be downloaded here:
http://www.businessmodelgeneration.com/downloads/business_model_canvas_poster.pdf

Example of the Business Model Canvas being used to review the business model of Nespresso, available from:
http://hbr.org/web/2013/05/why-the-lean-start-up-changes-everything/sketch-out-your-hypothesis

Strategyzer software – subscriptions are available to buy here:
http://www.businessmodelgeneration.com/toolbox

Life Cycle Assessment:

Joint UNEP-SETAC Life Cycle Initiative.
Available from: http://www.life cycleinitiative.org/

UNEP, (2009). Guidelines for Social Life Cycle Assessment of Products. UNEP, Paris.
Available from: http://www.unep.org/publications/search/pub_details_s.asp?ID=4102

Lead Users and building new markets:

von Hippel, E., (1986). Lead users: a source of novel product concepts. Management Science: 791–805.

Herstatt, C., von Hippel, E., (1992). From Experience: Developing New Product Concepts via the Lead User Method. Journal of Product Innovation Management, Vol. 9 pp.213-221.
Available from:http://web.mit.edu/evhippel/www/papers/Herstatt-EvH%20Journal%20Product%20Innov%20Management.pdf

Moore, G., (1991). Crossing the Chasm: Marketing and Selling Disruptive Products to Mainstream Customers. New York, HarperCollins.

Eco-innovation tools to support idea generation:

O'Hare, J. (2010). Eco-innovation tools for the early stages: an industry-based investigation of tool customization and introduction. PhD thesis, University of Bath, UK.

Business case for eco-innovation:

UNEP (2014). The Business Case for Eco-innovation. Paris, UNEP DTIE.

Design for Sustainability and Cleaner Production:

UNIDO-UNEP (2010). Promoting Resource Efficiency in SMEs resource kit (PRE-SME).
Available from: http://tinyurl.com/njkutdm

McAloone, T. C., Bey N. (2009). Environmental improvement through product development – a guide. Danish Environmental Protection Agency.
Available from: http://wwwx.dtu.dk/upload/institutter/mek/kp/mpu-elektronisk-uk.pdf

Crul, M.R.M, Diehl, J.C., (2007). Design for Sustainability: A Practical Approach for Developing Economies. Paris, UNEP DTIE.
Available from: www.d4s-de.org

Pricing Strategies:

Gregson, A., (2007). Pricing strategies for small business. Vancouver, Self-Counsel Press.

Green Marketing, Eco-labels and Greenwashing:

DEFRA, (2011). Green Claims Guidance [Online].
Available from:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69301/pb13453-green-claims-guidance.pdf

ISO 14020:2000 Environmental labels and declarations – general principles.
Available from: http://www.iso.org/iso/catalogue_detail?csnumber=34425

The Seven Sins (of greenwashing) (2013). UL Environment.
Available from: http://sinsofgreenwashing.org/findings/the-seven-sins/

Standards Map: Comparative analysis and review of voluntary standards. International Trade Centre. Available from: http://www.standardsmap.org/

Non-disclosure agreements and protecting intellectual property:

Intellectual Property Office, (2011). Non-disclosure agreements [Online].
Available from: http://www.ipo.gov.uk/nda.pdf

Value chain engagement process:

Stanley, C. (2013). Topic guide: engaging suppliers in sustainability [Online]. Available from: http://www.wrap.org.uk/sites/files/wrap/Engaging%20suppliers%20in%20sustainability%20Topic%20Guide%20-%20final%20v1.pdf

AccountAbility, United Nations Environment Programme, Stakeholder Research Associates Canada Inc (2005). The stakeholder engagement manual. Volume 2: The practitioner's handbook on stakeholder engagement.
Available from: http://www.unep.fr/shared/publications/pdf/WEBx0115xPA-SEhandbookEN.pdf

Testing and validating business model ideas:

Kastelle, T. (2011). How to test a business model like a scientist. [Online] Available from: http://timkastelle.org/blog/2011/03/how-to-test-a-business-model-like-a-scientist/

Also see Osterwalder & Pigneur, 2010.

# 4. BUILD ROADMAP

At this point, you and the COMPANY should have defined a new business strategy, a new business model as well as innovation ideas to support the implementation of the new business model. The next challenge is to build a roadmap that will progress the company towards successfully executing this strategy and business model.

## 4.1.Overview

The BUILD ROADMAP phase focuses on a workshop activity that will take your innovation ideas and assemble them into a roadmap of projects. This will put the company on course to implement its chosen business model and achieve its strategic sustainability goals. The term 'innovation idea' is used to refer to the ideas for new products, manufacturing technologies, marketing strategies and so on, that were generated during the SET BUSINESS MODEL phase. The term 'project for eco-innovation' is used to refer to a set of activities with a defined goal, scope and budget that is intended to implement an innovation idea or some part of a large innovation idea or a number of small innovation ideas. The term 'eco-innovation programme' is used to refer to the overall set of services delivered by the Service Provider to support the implementation of eco-innovation at the COMPANY.

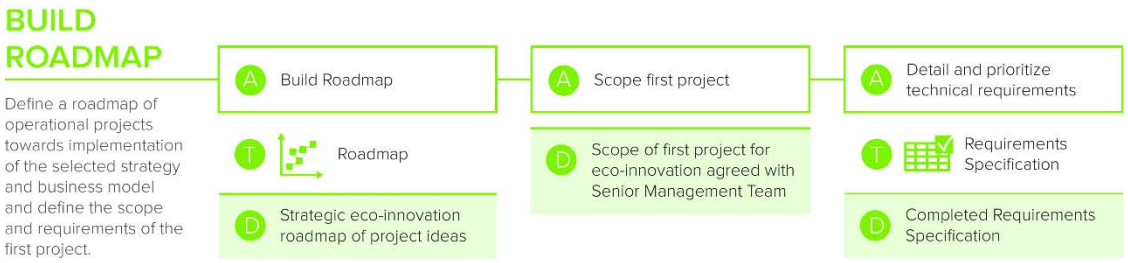



*Figure 4-1. Overview of the BUILD ROADMAP phase.*

## 4.2.Roadmapping workshop

The business model option that was previously selected will contain a number of innovation ideas at the operational level that are necessary to support the implementation of the business model. A roadmapping workshop can be used to build a roadmap that provides some foresight of how the company will transition to its desired new business model and achieve its goals through a series of projects for eco-innovation.

Prior to the workshop you should attempt to create a *Roadmap Development Matrix* which will provide details of the benefits, costs and risks of the key innovation ideas that are required to implement the selected business model. The matrix can then be used to inform the discussion in the roadmapping workshop.

| **Innovation title** | **Benefits** | **Capital investment** | **Implementation effort** | **Implementation risk** (High/ Medium/Low) | **Scheduling considerations** |
|---|---|---|---|---|---|
| Procurement policy on working conditions on tuna fishing vessels | Immediate reduction in brand damage risk | €0 | 6 person months | Medium | Need to establish sustainably fishing cooperative first. |
| Reduce fish loss in factory | Immediate cost saving (approx. €32,000/year) | €2,500 | 2 person months | Low | None |
| Marketing campaign to launch sustainably sourced fish product | Increased product sales | €21,000 | | | Need to complete all sustainable fishing projects first. |
| Establish sustainable fishing cooperative | Stepping stone to sustainable fishing | €4,000 | 6 person months (over 24 months) | High | None |
| Sustainable fishing – Eliminate purse seine and long line gear | Stepping stone to sustainable fishing | €15,000 | 4 person months (over 12 months) | Medium | Need to establish sustainably fishing cooperative first. |
| Sustainable fishing – Eliminate Fish Aggregation Devices | Stepping stone to sustainable fishing | €500 | 4 person months (over 12 months) | Low | Need to establish sustainably fishing cooperative first. |
| Sustainable fishing – Introduce quota | Stepping stone to sustainable fishing | €4,000 | 8 person months (over 18 months) | High | Need to establish sustainably fishing cooperative first. Need to agree timescales with cooperative fishermen |
| Reduce energy in tuna cooking | Immediate cost saving (approx. €11,000/year) | €4,000 | 4 person months | Low | None |

*Figure 4-2. Example of the Roadmap Development Matrix for the Tasty Tuna case study.*

The roadmapping workshop itself will require input from the Senior Management Team. Details of how to create a *Roadmap Development Matrix* and how conduct a roadmapping workshop involving the Senior Management Team are provided in the relevant section of the *Tool Instructions* document.

For innovation ideas that rely on the involvement of external stakeholders or value chain partners (e.g. the fishermen in the Tasty Tuna case) consideration must be given to how to obtain their input in the roadmapping process. One option is to complete an internal roadmapping workshop first and then invite the key stakeholders and partners to provide their feedback and input within a separate meeting. Alternatively, if the innovation idea that the partners are required for is particularly important to the overall roadmap, you may wish to hold a meeting with the partners first to discuss the scope and possible timing of a project and then hold the internal roadmapping workshop at a later date. Whichever method you apply for gathering input from value chain partners, the roadmap is not complete until the relevant sections have been reviewed and approved by the partners that will be involved in its implementation.

An important part of the roadmapping workshop is to organize the innovation ideas into projects for eco-innovation. Some innovation ideas may be very large and require several person-years of effort to implement. This type of innovation idea will be easier to implement and manage if it is split into several smaller projects. Conversely, some innovation ideas may be very small and easy to implement. It might therefore make sense to group together several of these small innovation ideas to form a single project. When performing this breaking-up of large innovation ideas and grouping together of small innovation ideas, you should aim to end up with projects that are between 1 month and 12 months in duration. Projects shorter than 1 month may not be very productive once the management overhead for setting up and closing down the project are taken into account. For projects longer than 12 months maintaining the motivation of the staff and tracking progress can become difficult.

This type of initial grouping or splitting up of innovation ideas into projects should be done for all the innovation ideas on the roadmap. The focus here should be on the innovation ideas that appear near the start of the roadmap. In particular it is important to define the scope of the first project – which is discussed in more detail in the following sub-section.

Management milestone

*It is of critical importance to involve representatives from the Senior Management Team, and particularly the CEO, in the roadmapping workshop as the output of the workshop will determine the scope of the first project for eco-innovation to be worked on, which will need to be fully supported by the Senior Management Team.*

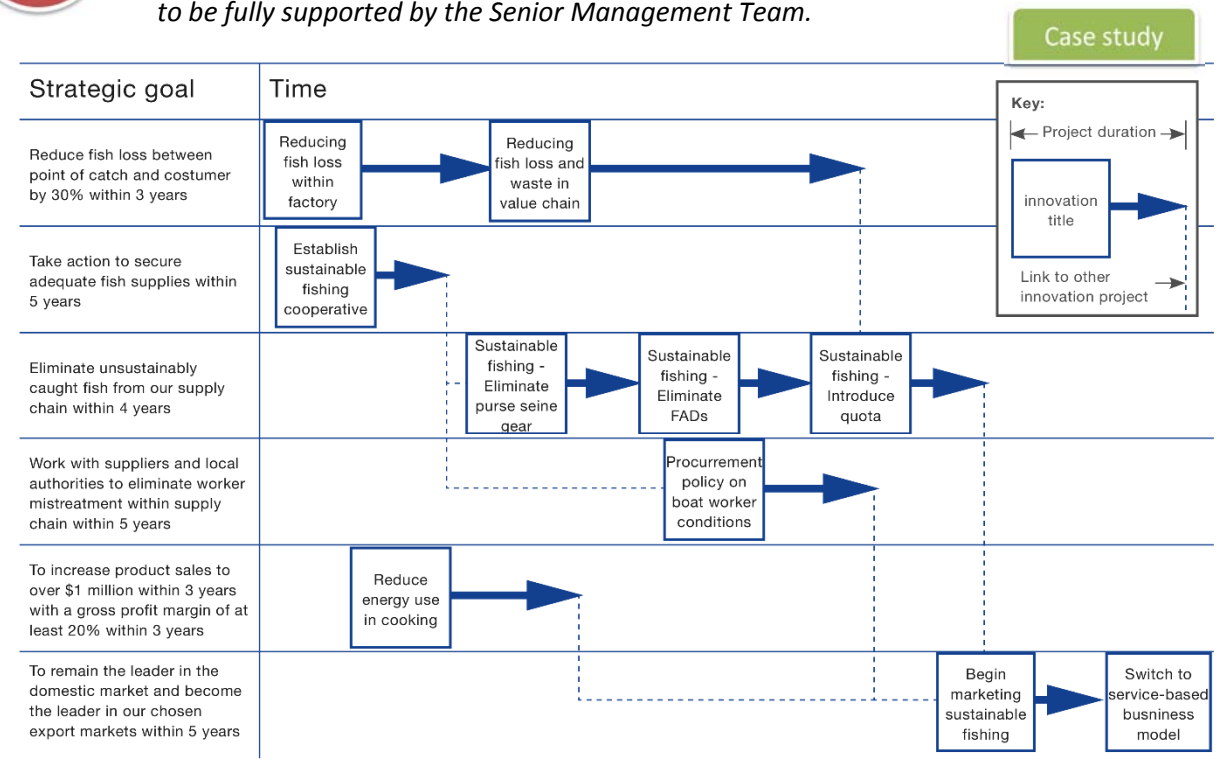



*Figure 4-3. Example roadmap for Tasty Tuna's transition to a service-based business model.*

### 4.2.1. Defining the scope of the first project for eco-innovation

Defining the scope of the first project for eco-innovation involves deciding which innovation ideas will be tackled during the project. If the first innovation idea that appears on the roadmap is very large or very small it may need to be broken-up into several smaller projects or grouped with other innovation ideas to form a more substantial project in order to end up with an estimated project duration of between 1 and 12 months.

The level of ambition for the first project for eco-innovation is particularly important to get right as many stakeholders, including the Senior Management Team, employees and value chain partners, will be scrutinising the performance of the project. Determining what is the 'right' level of ambition will depend on the resources and competencies available within the COMPANY, the attitude to risk of the COMPANY, the level of experience working with such projects and the views of the value chain partners involved in the project if applicable. As a facilitator of this process, the Service Provider should take care to set realistic and

achievable targets for the first project, but at the same time avoid becoming unambitious by defining projects that are “too safe”.

Another factor to consider is the business and sustainability benefits of the deliverables from the first project for eco-innovation. Some projects may be important stepping stones in the overall roadmap, but may not by themselves offer any immediate benefits for the COMPANY. Where possible, try to define the scope of the first project so that the deliverables will provide some tangible business benefits for the COMPANY (and any value chain partners involved in the project) as well as sustainability benefits - the results of the evaluation performed in Section 3.6.1 should help to inform this.

Once you have agreed the scope of the first project for eco-innovation, you should make a note of any important limitations of the scope. For example, the Tasty Tuna project on ‘Reducing fish loss in the factory’ may involve the introduction of conveyor belts to recover solid waste from the tuna loining process for conversion into fish meal. The scope of this project may be limited to just one production line so that the performance of this system can be evaluated before committing to introducing the technology in the rest of the production lines within the factory in a subsequent project.

The completion of the roadmap, including details of the scope of the first project, is an important deliverable within the eco-innovation programme as it should demonstrate to the COMPANY that transitioning to the new business model and achieving their eco-innovation strategic goals is both possible and feasible.

## 4.3.Detailing the requirements for the first project

With the scope of the first project defined, the task turns to the activity of defining the requirements for the innovation idea or ideas that make up the first project (for simplicity it is assumed from this point onward that the first project involves one innovation idea). A ‘requirement’ is a singular documented physical and functional need that a particular design, product or process must be able to perform. The focus here is on defining and prioritising the technical requirements for the project. If the innovation idea that will be tackled during the project involves a significant technology element then it will be useful to read the accompanying publication ‘*Moving Ahead with Technologies for Eco-innovation*’ (UNEP, forthcoming), which provides guidance on technology development and technology transfer for eco-innovation.

### 4.3.1. Defining the technical requirements

The level of detail concerning the technical requirements for innovation idea that were captured during the SET BUSINESS MODEL phase was sufficient to estimate the likely sustainability benefits and investment costs, but at this stage it is necessary to provide a complete set of technical requirements that can be used to guide the development of the innovation. A simple tool called the *Requirements Specification* is used to capture the decisions about the technical requirements of the innovation in hand. The purpose of the requirements specification is to define the basic characteristics and properties of the innovation idea in a structured and solution-neutral format. It can also be a helpful communication tool for use with any value chain partners involved in the project to ensure that expectations for the project are aligned. Value chain partners involved in the project should therefore have an opportunity to review and provide feedback on the *Requirements Specification* before finalization.

Filling in the *Requirements Specification* is carried out in a structured manner, typically following the life cycle of the innovation that is being developed. The example in Figure 4-4 shows a sample *Requirements Specification*, with some areas filled in for the Tasty Tuna Company. You will notice that the requirements are organized into the life cycle stages "raw materials", "distribution", "manufacture", for this example. If the COMPANY is in another business area, such as, for example chemical management, another set of categories can be chosen.

The *Requirements Specification* contains a number of fields, which should be filled in on a complete row-by-row basis, for each requirement. Detailed instructions on how to complete the *Requirements Specification* are provided in the *Tools Instructions* document. Further information about completing the 'Priority' column is given in the following section.

Case study

| Requirements specification for: Tasty Tuna Company<br>*Water usage reduction project 01* | | | | | |
|---|---|---|---|---|---|
| **Number or code** | **Requirement** | **Comments** | **Priority** (MSCW) | **Review date** | **Reviewed / Approved** |
| Req01 | Reduce water consumption in thawing process to $3m^3$ per tonne of processed fish | Lorenzo method of thawing proven to achieve this level of water saving performance. | S | 01/02/15 | Mr. Tasty |
| Req02 | Eliminate water usage in filleting operation. | 'Filleting' includes all processes from end of thawing to start of canning process. | M | 31/03/15 | Mrs. Tuna |
| Req03 | Capture >80% of solid organic waste from filleting operation for reprocessing. | Market has been identified for use of entrails and fish scraps in fishmeal products. | S | 15/06/15 | Mr. Tasty |
| Req04 | Compatible with product output of at least 275kg/hour | | M | 14/02/15 | Mrs. Tuna |
| Req05 | Cleaning requirement of less than 0.5 person hours per 8 hour shift. | Relates to the cleaning of the water saving equipment installed (if any), not the cleaning of the fish product. | S | 01/02/15 | Mrs. Tuna |
| Req06 | Maintenance requirement of less than 0.5 person hours per week. | Maintenance to be undertaken by unskilled operative. | M | 14/02/15 | Mr. Tasty |

*Figure 4-4 - Sample Requirements Specification.*

### 4.3.2. Prioritizing the technical requirements

Prioritization of requirements is necessary because the list of requirements generated previously will inevitably require more time and resources than is available. You may therefore need to reduce the scope of the project to some extent. There are a number of good reasons to create and maintain a prioritized list of requirements such as:

- Prioritization can be used to set an initial scope for the project. With rough estimates of the time and resources required to complete each of the requirements, it can quickly become apparent that the team will not be able to deliver all of the requirements. Knowing this early on in the project can help with the technical and commercial planning and avoid setting unrealistic expectations with both internal staff and customers.

- The initial prioritization can also be used to help plan the work schedule. By tackling the most important requirements first, the risk of failing to deliver an essential requirement is reduced. This is an important risk for eco-innovation because it can be very difficult to estimate the time and effort required to deliver on a requirement when working with new technology or processes.
- The prioritization process can also be a useful way of engaging the value chain partners that will be involved in the implementation of the project and ensure that priorities are aligned between the COMPANY and the other partners.
- Once the project has started, the requirement prioritization should be regularly updated. Changes in priority may arise because the project team has learned something new about the problem since the start of the project, or because the user (where the 'user' could be the COMPANY or the customer of the COMPANY depending on the type of innovation idea being implemented) has changed their requirements. Both of these types of changes are more likely to happen within a project for eco-innovation compared to regular types of project because the team is learning about the technology, processes, or systems they are working with and at the same time the user is learning about their requirements of the new product or system.

**How to prioritize?**
An approach to prioritization that has proven popular because of its use of plain English terms is the 'MoSCoW' method. This involves assigning each of the requirements for the innovation idea a rating using the following scale:

**M - MUST** have this.

**S - SHOULD** have this if at all possible.

**C - COULD** have this if it does not affect anything else.

**W - WON'T** have this time but would like in the future.

When rating each of the requirements, it is important to be disciplined and avoid making every requirement a 'must'. Keep in mind that there may be deadlines for the development and implementation of the innovation idea and it is usually better to deliver on time, with a limited set of requirements fulfilled, than late with more requirements fulfilled.

Another consideration is the desired level of quality required. If the output of the project is a prototype or proof of concept, the acceptable quality level against which the fulfilment of a requirement will be judged may be quite low. Conversely, if the aim is to have a customer-ready product which is ready for full volume production process then the quality threshold will be set higher. These considerations of quality can have a significant impact on which of the requirements end up in the 'must' list and the effort that will be required to achieve them. It can sometimes help to start by selecting the requirements to add to the 'won't' list, particularly when there are a group of people performing the categorization, as this helps to remind people that there will be other opportunities in the future to get their favourite requirement implemented.

This prioritization activity should inform the writing of the project plan (see Section 5.2.1). It can then be used to create a work schedule that aims to complete high priority requirements first but also takes account of other factors such as dependencies, availability of staff and seasonal variations in workload.

## 4.4.Checklist

| **BUILD ROADMAP phase** | (Tick when complete) |
|---|---|
| Have you completed a workshop involving Senior Management Team to build a roadmap towards the desired strategy and business model? | ☐ |
| Have you written-up the workshop outputs as strategic eco-innovation roadmap of projects? | ☐ |
| Has the Senior Management Team selected and defined the scope of the first project to implement? | ☐ |
| Have you completed a *Requirements Specification* for the innovation idea to be developed, including a complete and prioritized set of technical requirements? | ☐ |

## 4.5.Supporting tools

The following tools are relevant for this section of the manual. Details of how to apply the tools and templates are provided in the *Tool Instructions* document.

*Roadmap*

**Description:** The Roadmap tool is used to evaluate the key innovation ideas that will be required to achieve the desired business model and strategy for eco-innovation in terms of key issues such as capital investment, effort and risk. This evaluation can then be used to build a logical sequence of projects for eco-innovation to progress the company towards accomplishing its strategic goals for eco-innovation.
**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with representatives from the Senior Management Team at the COMPANY.
**When?:** During the BUILD ROADMAP phase.
**Inputs:** A set of innovation ideas that contribute towards the overall implementation of a new business model and the strategic goals.
**Outputs:** A roadmap of projects organized into a logical sequence that will lead the COMPANY towards the overall implementation of the new business model and the strategic goals.

*Requirements Specification*

**Description:** This tool is used to capture the decisions about the technical requirements of the innovation idea being implemented. The purpose of the requirements specification is to define the basic characteristics and properties of the innovation idea in a structured and solution-neutral format.
**Who?:** This tool is intended for use by the Service Provider together with the project team from the COMPANY.
**When?:** During the IMPLEMENT phase.
**Inputs:** An innovation idea that has been chosen for implementation within the current project for eco-

innovation.

**Outputs:** A completed requirements specification for the technical elements in the innovation idea.

## 4.6.References and resources

MoSCoW method

Coley, P. 2012. 'MoSCoW Prioritization' [Online].
Available from: http://www.coleyconsulting.co.uk/moscow.htm

# 5. IMPLEMENT

The IMPLEMENT phase is focused on planning and delivering the project for eco-innovation that has been chosen by the COMPANY as the first to be implemented from the roadmap. Although you may have significant experience of project management, there are some aspects of a project for eco-innovation that might be new for you, or need to be managed in a different way to a conventional project. The section provides advice on managing the key aspects of a project for eco-innovation.

## 5.1. Overview

The main input of the Service Provider at this stage is the creation of a project plan. This plan needs to be approved by the Senior Management Team before the work can begin. Once the project is up and running, your input will be to provide some management guidance to keep the project on track. Some advice on this topic is provided covering some of the more challenging aspects of supporting a project for eco-innovation.


*Figure 5-1. Overview of the IMPLEMENT phase.*

## 5.2.Creating a project plan

The aim of creating a project plan for the chosen project is to help ensure that the project runs smoothly and effectively. By creating a clear plan, you will avoid raising the concerns of the Senior Management Team who must sign-off the plan before work can commence.

### 5.2.1. Writing the project plan

No specific template is provided for creating a project plan as a COMPANY will often have its own project planning procedures and templates. However, there are a number of key questions that need to be addressed in the plan. These include:

- **What are the aims and objectives of the project?** A clear definition of aims and objectives must be provided to ensure that the company understands what the project must achieve and how they will know if they have been successful. The aims and objectives should be in line with the project scope agreed by the Senior Management Team in Section 4.2.1. For instance, the aim of a project may be to develop a better understanding of a novel technology, thereby reducing the technical risk of committing to launching a new product that incorporates the new technology. Based on this, a

project objective may be to create a prototype of the product. Similarly, a prototype product may be used to gather feedback from customers in order to create a better understanding of the likely market acceptance, in order to reduce the commercial risk. This section of the plan should also briefly explain how the project will contribute to the implementation of the new business model and the achievement of the strategic goals.

- **What will be the deliverables from the project?** The evaluation of the sustainability benefits of the new business model that was performed using the *Life Cycle Thinking* template (described in Section 3.6.1) should have identified the ultimate benefits from the project that will be derived for the company and other partners. It is also important to understand what actually needs to be delivered in order to realize those benefits. In some cases the scope of the project may not extend to delivering the complete innovation idea, as discussed in Section 4.2. If the aim of the project is to create a partial solution, as a stepping stone to the full solution, the plan needs to clearly identify the limitations of the project deliverables with respect to the complete solution i.e. "The ultimate aim is to implement a Design for Sustainability procedure across all design teams. In this project the scope is limited to implementing the procedure with a single design team."
- **What resources are required to complete the project?** The evaluation of the cost and effort of implementing the new business model (described in Section 3.6.1) should have identified the main costs for the company of implementing the innovation idea, but some effort should be made to list the resources required including budget, personnel, equipment. Particular focus should be given to resources that are not currently available (e.g. test facilities) and how they might be sourced (e.g. work with local university).
- **Who should be involved in the project?** Consideration should be given to the skills and knowledge that will be of particular importance to the project. Unfortunately, it may not be feasible to use the COMPANY's most experienced or knowledgeable personnel as these people are often critical to the day to day operations of the company and so cannot be assigned to the project for eco-innovation. Nevertheless, it is important to receive input from these experienced people were possible, so try to get them involved as a stakeholder for the project or mentor to younger members of the project team.
- **What are the implications for other parts of the company and value chain partners?** The project for eco-innovation selected may focus on one or two particular business model blocks but it is important to consider the possible implications for the other blocks. In particular, could the project proposal be adapted in some way in order to generate wider benefits across the company or for value chain partners?
- **How will the project be managed?** The project plan needs to provide a suggestion for how the project will be managed. This should make clear:
    - Who is ultimately responsible for the success of the project?
    - When and how will project progress be reported?
    - Will the project run alongside day-to-day operations or be implemented by a separate and dedicated team? – see Section 2.5 for further discussion of this topic.
    - What actions will be taken if the project is not progressing as planned?

- How will risk be managed? The *Risk Register* that was initially completed during the *SET BUSINESS MODEL* phase should be reviewed and updated regularly as a tool for risk management.

### 5.2.2. Presenting the project plan

Depending on the COMPANY, it may be necessary at this stage to present the project plan in order to gain senior management approval to proceed or to obtain resources (internal or external). During the BUILD ROADMAP phase, the Senior Management Team will have agreed in principle to proceed with the project. The aim of this presentation therefore is not on convincing the Senior Management Team of the potential business benefits of the project but on convincing them that a realistic plan is in place that will deliver the business benefits that have been promised. This presentation will draw heavily on the content project plan and the previous preparatory work. Guidance on what to include in the presentation is provided in the box below.

***Key topics to include in the presentation of the project plan to Senior Management***


- **Aims and objectives of the project** – in particular, has anything changed since the BUILD ROADMAP phase?
- **Deliverables and timescales** – if the deliverable is a new product (or prototype) you may want to create a one page marketing flyer that describes the features and benefits of the product to help the Senior Management Team understand what the product is and how it would be marketed to the user.
- **Key activities** – what needs to be done to successfully complete the project?
- **Key risks** – what could go wrong and what are you doing to mitigate those risks. The *Risk Register* created during the SET BUSINESS MODEL phase should be revisited and updated for this purpose.
- **Resources and management** – what resources are required and how will the project be managed.
- **Next steps** – if the project is approved what will be the first actions taken.

The outcome of the meeting is likely to be one of the following decisions:

- **Agree to proceed** – Well done! Proceed with the activities outlined in the 'next steps' section of the presentation.
- **Request for more information** – if there are unanswered queries following the presentation you may be required to go back to some of the earlier steps to fill in missing details or identify evidence in support of key assumptions. It is important to agree a timescale for the next review in order to avoid the project stalling.
- **Pause** – there may be many reasons why the company might not feel ready to proceed with the project. Try to determine exactly what it is about their current situation that is making them reluctant to proceed. Try to identify ways that you can help the company to get to a position where they would be ready to begin the project.
- **Abandon** – at this stage it is unlikely the company will abandon eco-innovation entirely but it may be that another idea is now preferred. Try to investigate what has caused this change of preference before deciding how to proceed.

## 5.3.Supporting the IMPLEMENT phase

Many of the activities in the IMPLEMENT phase will be similar to normal innovation projects, but there are some aspects that require special attention within a project for eco-innovation. This section highlights some of those issues and provides guidance on how to address them.

At the start of a project for eco-innovation, it is important to make sure responsibilities and ownership of tasks are clear, this will help to get engagement and commitment from project team members. As eco-innovation will involve new, and sometimes unplanned, activities it can be difficult to allocate all of the tasks to relevant personnel at the start of the project. However, as a minimum, you should request the on-going support of the Focal Point to coordinate and monitor the progress of the project. Depending on the situation, it may be that you as the Service Provider take on the Project Manager role. Alternatively, the CEO may appoint a Project Manager to the project from their own personnel. Either way, a key aspect of the Project Manager role is to ensure that tasks are allocated to individuals who then have the responsibility to ensure that the task is completed on time and in accordance with the specification. Where a project falls across two or more different functions within an organization (e.g. 'Production' and 'Marketing') it is particularly important to ensure that responsibilities and reporting channels are clear to avoid the project 'falling down the cracks' between the functions.

Communication is another important aspect of a project for eco-innovation where the Project Manager will play an important role. The Project Manager should act as a central focal point for the project and make everybody aware that if they have any questions, comments or concerns about the project then the Project Manager should be the first person they speak to. This is true for both internal and external partners (for example where suppliers or research centres are involved in the project). Other ways to promote good communication include:

- **Set-up a project notice board** – This should provide key facts about the project such as the aims and objectives of the project, who is involved, how other people can contribute etc. The project notice board should also be used to record what activities each team member is working on and their progress. It is important that this information is regularly updated so that the notice board is viewed and credible and up to date source of information about the project**.**
- **Hold regular progress meetings** – If members of the project team are working on different tasks it can be useful to hold regular progress meetings (every fortnight for example) where one person per task reports on progress on that task. This does not need to involve every member of the team, just those that are the owner of a particular task. To ensure the meetings are short and effective, try to establish a simple set of questions for people to answer when reporting back. For example:
    - What progress has been made?
    - What has gone well?
    - What problems have you encountered?
    - What could we do to improve performance?
- **Organize open briefings** – Much of the eco-innovation activity within the company to date may have been conducted by you as the Service Provider in discussion with the Senior Management Team. Therefore, the start of the project is a good opportunity to organize a briefing session that anybody within the company can attend to learn about the project and ask questions. Such

briefings should not be compulsory to attend as otherwise they can become a significant cost for the company. Further briefings after key milestones can also be useful to keep interested stakeholders up to date.


*The explicit support of the CEO is often an important factor in the success of large projects. Therefore ask the CEO to make a statement to all staff at the start of the project to help launch the practical eco-innovation activities, expressing why the company is pursuing an eco-innovative strategy and how this first project will contribute to that strategy.*

Related to the issue of communication is the issue of feedback. Within projects that aim to develop a new product, there should be somebody in the project team that is acting as the representative of the customer (sometimes called the 'Voice of the customer'). That person should receive regular updates and demonstrations so that they can provide feedback. It is important to get this feedback as early as possible so that changes can be made before further work is completed, which makes changes more difficult and considerably more expensive. In order to get early feedback, the product development schedule should prioritize the completion of key features at the start of the project, even if this means presenting the representative of the customer a partial solution, so that they can provide feedback on the features of the solution that are complete. Organizing regular (e.g. fortnightly or monthly) 'demonstration' meetings with the representative of the customer to gather feedback, also has the advantage that it provides frequent small milestones that can help focus and motivate the project team.

During the course of a project for eco-innovation, you are likely to encounter some problems. Creative thinking can help to overcome these problems quickly and effectively. To help encourage creative problem solving, you can help the team to apply structured problem solving tools. One example of this type of tool is the *9 Windows on the World* tool. This tool was introduced in Section 3.5.2 to support idea generation, but it is also well suited to dealing with technical problems. Instructions for how to apply the *9 Windows on the World* tool are provided in the *Tool Instructions* document.

A final consideration for the Service Provider during the IMPLEMENT phase is that you must ensure that the project team continue to be aware of the big picture to which the project is contributing. For instance, are decisions being made that are consistent with the business model and business strategy that have been set? Also, what other operational areas of the company will be impacted by this project? What have we learned that reinforces or casts doubt on the assumptions that were made prior to beginning the project? The aim here is to strike a balance between maintaining focus on completing the project as quickly and effectively as possible but at the same time trying not to miss opportunities that might emerge to enhance the business value of the project by becoming too 'blinkered'. This is a difficult challenge, but remember that a comprehensive review of the project will be undertaken following the completion of the project. This review process is described in in the following section.

## 5.4.Checklist

| **IMPLEMENT phase** | (Tick when complete) |
|---|---|
| Have you written a project plan, including details of the key activities, a work schedule and the main project risks? | ☐ |
| Have you presented the project plan to the Senior Management Team and obtained approval to proceed where necessary? | ☐ |
| Have you implemented measures to improve the project in areas such as project management, communication and customer feedback? | ☐ |

## 5.5.Supporting tools

The following tools are relevant for this section of the manual. Details of how to apply the tools and templates are provided in the *Tool Instructions* document.

*Risk Register*

**Description:** This tool provides a structured approach to anticipating and prioritizing all possible risks connected with an eco-innovation business model or innovation idea. Furthermore the tool helps the user to define preventive and corrective actions, where necessary.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.

**When?:** During the set SET BUSINESS MODEL phase to identify and evaluate the risks associated with a business model proposal, and during the IMPLEMENT phase to help manage risks within the implementation of a project.

**Inputs:** An eco-innovation business model or project proposal that has been chosen for implementation.

**Outputs:** A prioritized list of risks along with mitigation options.

*9 Windows on the World*

**Description:** This tool provides a structured approach to analysing problems and generating innovation ideas. By forcing participants to think about the problem from different perspectives, it can provide new insights into the root cause of the problem – leading to novel solution concepts.

**Who?:** This tool is intended for use by the Service Provider as a workshop exercise with two to six key representatives from the COMPANY.

**When?:** During the SET BUSINESS MODEL phase to generate product ideas and during the IMPLEMENT phase to help solve problems.

**Inputs:** A specific sustainability problem or inefficiency that you would like to address.

**Outputs:** Innovation ideas to address the sustainability problem.

# 6. REVIEW

By this point, both the Service Provider and the COMPANY should have significant experience and knowledge of eco-innovation. It is now time to review the outcomes of the first project for eco-innovation, and determine if the current roadmap and business model are delivering the desired business performance and remain aligned with the business strategy.

## 6.1.Overview

The REVIEW phase features two main activities, the review activity and the planning of next steps. The review should cover the performance of the project, your personal performance as a Service Provider, and a review of the strategy, business model and roadmap.

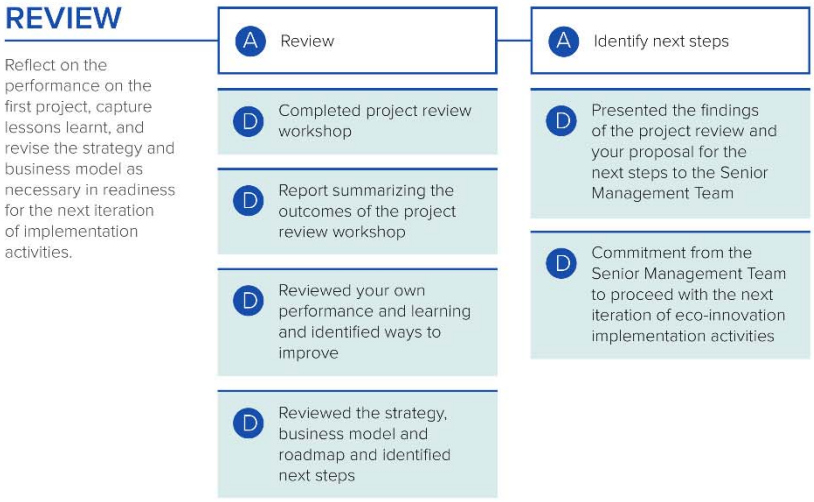



*Figure 6-1. Overview of the REVIEW phase.*

## 6.2.Reviewing the project results and benefits

Before moving forward, it is time to look back and reflect on the results of the project for eco-innovation and the wider benefits in terms of learning, acquired experiences and knowledge gathered from the previous phases of the eco-innovation programme – for both the Service Provider and the COMPANY.

### 6.2.1. Conducting a project review

The project review should focus on the performance of the project, the results achieved and the ways that future projects could be improved. Ultimately, you are trying to answer the questions:

- Did the project accomplish what it set out to achieve?
- What wider benefits have been generated by the project (e.g. new knowledge and skills, new partnerships, brand and public relations benefits)?
- How could future projects be managed differently to make them more successful, efficient and cost-effective?

Gathering the information you need to answer these three questions can be done efficiently through a review workshop. A suggested process for this review workshop is provided below. If you are unable to obtain the participation of the relevant personnel you will need to perform the review yourself and try to get your findings and conclusions validated by your Focal Point within the company.

**Review workshop planning**

If you have not already done so, seek the permission of the CEO to perform the review workshop. Explain to the CEO that the purpose of the review workshop is to determine the results and benefits of the project and to identify ways to improve the performance of future projects for eco-innovation.

Decide on the scope of the review in terms of time period considered, which aspects of the project will be covered and who will be consulted during the review. If value chain partners have been involved in the project, it may be useful to obtain their feedback within the review process. Gaining feedback from partners will be particularly important if they are due to be involved in subsequent projects on the roadmap as you will need to ensure that they are satisfied with the business benefits they are realising from the eco-innovation activities and remain motivated to continue with their involvement.

Whilst feedback and improvement ideas for all aspects of the project should be welcomed, it can be useful to focus attention on one or two key aspects. For instance, if the aim of the project was to develop a more sustainable packaging solution, the review might focus on the technology development process and the communication between the production process, design and marketing personnel.

Aim to complete the review soon after the completion of the project – when project team members will still be able to remember the details of the project. However, it is important to allow time for the results of the project to become clear. For example, if the project was about the development of a more sustainable packaging solution you may have to wait 3-6 months to obtain the product sales data in order to be able to evaluate the consumer acceptance of the new design.

Gather and review project documentation such as the requirements specification and the *Risk Register*. Also gather evidence of the results and benefits of the project e.g. data showing a reduction in the energy consumption of production processes following the introduction of a new manufacturing process.

Decide on who should participate in the review workshop. Team leaders are good candidates to involve in the review because they should have a good overview of the activities completed and the problems encountered. The presence of members of the Senior Management Team may inhibit some participants from providing a critical and honest review of the project and should therefore be avoided.

Prepare a review form that includes no more than 10 questions about the key aspects of the project you would like to review. Send each participant a copy of the review form to complete prior to the workshop. Some basic, generic questions are:

- Did the project accomplish what it set out to achieve?
- What went well within the project?
- What was challenging about the project?
- What could have been done differently?

- What have you learned from participating in the project?

Try to develop your own more specific questions for inclusion in the review form. Ask the participants to bring their completed review forms with them to the workshop.

**Facilitating the review workshop**
Begin the workshop by explaining that the purpose of the review is to determine the results and benefits of the project and to identify ways to improve the performance of future projects for eco-innovation. Ask participants to be open, honest and objective when providing their feedback. It can also be productive to ask participants to focus their criticisms on the project process, not on individuals.

Ask each participant in turn to read out one of the points they have made in their review form. Allow some time for discussion of each point, but aim to keep progressing through the points so that there is an opportunity to hear all of the points. Continue until all points have been heard.

Based on the points raised and the discussion, ask the participants to list their top 5 actions that can be taken to improve the performance of future projects and make a note of these.

**Reporting the findings of the review**
To ensure that the conclusions from the review are captured and acted upon it is important to summarize the findings from the review workshop into a short report. This should explain the scope of the report, describe the review workshop activity and highlight the recommended actions to improve the performance of future projects.

One aspect to think about is how the benefits of the project could be enhanced. For instance, if a new eco-innovative product has been launched, should the company now apply for an eco-label for the product? Is there an award scheme for sustainable product innovations that you could enter? Are there other parts of the company that could benefit from what has been achieved within the project? These types of follow-up actions should be noted in the report for discussion at the roadmap and business model review.

Once the review report is ready, you should try to arrange a short meeting with the CEO and the Senior Management Team in order to present a summary of this report. This presentation can be integrated at the start of the roadmap and strategy review, described in the Section 6.3.

### 6.2.2. Reviewing your own performance

The review until now has been focused on the benefits for the COMPANY and what they have gained. However, you should take the time to review your own performance, what you have learned and what your next steps should be. In particular, you should ask yourself:

- What did I do well?
- What did I find challenging?
- What could I do differently in future projects?
- What have I learned?
- Are there other markets that I should target with my eco-innovation services?

It can be useful to get feedback from the CEO or the Focal Point in order to have some alternative perspective on your performance. As with the project review, you should aim to generate 5 actions you can take to improve your performance in supporting future projects for eco-innovation. If you have identified potential new markets for your eco-innovation services, this will involve returning to the PREPARE phase in order to assess the attractiveness of the market and build your understanding of that market.

## 6.3.Reviewing the business model and roadmap

Over the course of the first project for eco-innovation it is likely that a lot of new information will have been revealed regarding issues such as the needs of the market and market trends, the innovation capacity of the company, the willingness of the supply chain to participate etc. Since the eco-innovative business model and roadmap were defined, there may also have been developments in areas such as technology, the price of energy and commodities, or legislation. You and the COMPANY will also have learned about which aspects of the business model are working well, and which need some refinement. It is therefore important to regularly review and update the business model and roadmap. Note that the focus is on the roadmap and business model because the overall strategy should not need updating regularly, although some small adjustments to the strategy and goals may be necessary at times.

The business model and roadmap review can be completed to a large extent by you working alone. You can then present your findings and recommendations to the CEO and Senior Management Team. The key activities in this review are:

- Look again at the recommendations from the project review and consider if there are any implications for the business model or roadmap? For example, is there a need for additional training on topics like life cycle thinking before proceeding with the next project? Was the lack of engagement from suppliers highlighted as a problem, and if so, what could be done to address this?
- Review the business model and try to evaluate:
    - Is there any new information of evidence that strengthens or weakens your confidence in the validity of the business model? In particular, what has been the response of competitors? How are they adapting, and are new competitive threats emerging? If you have serious concerns about the validity of the business model then your recommendation to the COMPANY should be to revisit the SET BUSINESS MODEL phase in order to address the issues.
    - What progress was made during the last project on the sustainability hotspots identified during the *In-Depth Assessment*?
    - Were any new performance gaps identified over the course of the project? If so, try to generate new project ideas to overcome those gaps and add them to the roadmap.
- Review the roadmap and decide:
    - Is there any new information of evidence that strengthens or weakens the case for completing any of the roadmap items? Remove any items that are no longer important or relevant.
    - Are there any new ideas that should be added to the roadmap? Where should they fit in?
    - Is the order of the roadmap items still valid? If not, how should it change?

- Which idea, or combination of ideas on the roadmap, would make a logical next project for the COMPANY?

The final activity is to present your recommendations to the CEO and Senior Management Team. Guidance on what to include in this presentation is provided in the box below.

***Key topics to include in the presentation of the review to Senior Management***


- A summary of the project review activity, highlighting the results of the project and the business benefits gained.
- The top 5 recommended actions to improve performance on projects for eco-innovation that came from the project review workshop.
- Your analysis of the on-going validity of the business model and roadmap.
- Your recommendation for the next steps, whether this be proceeding to the next project on the roadmap, or revisiting earlier phases in the process in order to address any issues that have arisen with the business model or roadmap

Following this meeting you should aim to get a decision on how to proceed, which should hopefully include a new contract for you to support the COMPANY in the next round of eco-innovation implementation activities!

## 6.4.Checklist

| **REVIEW phase** | (Tick when complete) |
|---|---|
| Have you completed a project review workshop? | ☐ |
| Have you written a short report summarizing the outcomes of the project and the project review workshop? | ☐ |
| Have you reviewed your own performance and learning over the implementation process to date? | ☐ |
| Have you conducted a strategy, business model and roadmap review to assess progress made and identify the logical next steps? | ☐ |
| Have you presented the results of the project, the recommendations from the project review and your proposal for the next steps to the CEO and Senior Management Team? | ☐ |
| Have you been able to obtain commitment from the CEO and Senior Management Team to proceed with the next iteration of eco-innovation implementation activities? | ☐ |

## General references and resources

Introduction to eco-innovation:

Ecodesign Centre (2013). Briefing Document: Eco-Innovation [Online].
Available from: http://www.edcw.org/en/resources/ecodesign-centre-briefing-document-eco-innovation

Guidance on how to support eco-innovation in SMEs:

EIO and CfSD (2013). Eco-innovate! A guide to eco-innovation for SMEs and business coaches. Eco-Innovation Observatory. Funded by the European Commission, DG Environment, Brussels.
Available from: http://cfsd.org.uk/site-pdfs/eco-innovate-sme-guide.pdf

Eco-innovation policy aspects:

Kemp, R., & Peterson, P. (2007). Final report MEI project about measuring eco-innovation [Online].
Available from: http://www.oecd.org/greengrowth/consumption-innovation/43960830.pdf

UNEP (2012). Global outlook on sustainable consumption and production policies: taking action together. UNEP, Nairobi.
Available from: http://www.unep.org/pdf/Global_Outlook_on_SCP_Policies_full_final.pdf

Design for Sustainability and Cleaner Production:

UNIDO-UNEP (2010). Promoting Resource Efficiency in SMEs resource kit (PRE-SME).
Available from: http://tinyurl.com/njkutdm

McAloone, T. C., Bey N. (2009). Environmental improvement through product development – a guide. Danish Environmental Protection Agency.
Available from: http://wwwx.dtu.dk/upload/institutter/mek/kp/mpu-elektronisk-uk.pdf

Crul, M.R.M, Diehl, J.C., (2007). Design for Sustainability: A Practical Approach for Developing Economies. Paris, UNEP DTIE.
Available from: www.d4s-de.org

Eco-innovation projects and relevant initiatives:

Eco-innovation Observatory – reports, data and examples concerning eco-innovation activities in the European Union.
http://www.eco-innovation.eu/

Ecoweb – database of over 3000 EU-funded projects.
http://www.ecoweb.info/

Eco-innovation project database – details of over 200 EU-funded projects.
http://ec.europa.eu/environment/eco-innovation/projects/

Global SCP Clearinghouse – UNEP convened platform for the exchange of knowledge, tools and information related to sustainable consumption and production.
http://www.scpclearinghouse.org/

Life Cycle Initiative – UNEP-SETAC joint project to encourage the development and practical adoption of life cycle thinking.
http://www.lifecycleinitiative.org/

KARIM project - European network for responsible innovation and technology transfer.
http://www.karimnetwork.com/

CycLED Cycling resources embedded in systems containing Light Emitting Diodes.
http://www.cyc-led.eu/Eco-innovation.html

# About the UNEP Division of Technology, Industry and Economics

Set up in 1975, three years after UNEP was created, the Division of Technology, Industry and Economics (DTIE) provides solutions to policy-makers and helps change the business environment by offering platforms for dialogue and co-operation, innovative policy options, pilot projects and creative market mechanisms.

DTIE plays a leading role in three of the six UNEP strategic priorities: **climate change, harmful substances and hazardous waste, resource efficiency.**

DTIE is also actively contributing to the **Green Economy Initiative** launched by UNEP in 2008. This aims to shift national and world economies on to a new path, in which jobs and output growth are driven by increased investment in green sectors, and by a switch of consumers' preferences towards environmentally friendly goods and services.

Moreover, DTIE is responsible for **fulfilling UNEP's mandate as an implementing agency for the Montreal Protocol Multilateral Fund** and plays an executing role for a number of UNEP projects financed by the Global Environment Facility.

## The Office of the Director, located in Paris, coordinates activities through:

> **The International Environmental Technology Centre** - IETC (Osaka), promotes the collection and dissemination of knowledge on Environmentally Sound Technologies with a focus on waste management. The broad objective is to enhance the understanding of converting waste into a resource and thus reduce impacts on human health and the environment (land, water and air).

> **Sustainable Consumption and Production** (Paris), which promotes sustainable consumption and production patterns as a contribution to human development through global markets.

> **Chemicals** (Geneva), which catalyses global actions to bring about the sound management of chemicals and the improvement of chemical safety worldwide.

> **Energy** (Paris and Nairobi), which fosters energy and transport policies for sustainable development and encourages investment in renewable energy and energy efficiency.

> **OzonAction** (Paris), which supports the phase-out of ozone depleting substances in developing countries and countries with economies in transition to ensure implementation of the Montreal Protocol.

> **Economics and Trade** (Geneva), which helps countries to integrate environmental considerations into economic and trade policies, and works with the finance sector to incorporate sustainable development policies. This branch is also charged with producing green economy reports.

*DTIE works with many partners (other UN agencies and programmes, international organizations, governments, non-governmental organizations, business, industry, the media and the public) to raise awareness, improve the transfer of knowledge and information, foster technological cooperation and implement international conventions and agreements.*

**For more information,**
**www.unep.org/dtie**

The implementation of *Eco-innovation* in a company means incorporating sustainability throughout all business operations based on life cycle thinking - to create solutions that meet market needs. This is most effectively done in cooperation with partners across the value chain.

This *Eco-innovation Manual* and respective *Tool Instructions* aims to provide stepwise guidance for technical experts working in organizations that provide professional services to companies, namely SMEs to implement eco-innovation. It can also be used by technical experts within companies themselves to start the process of eco-innovation. Each chapter of this *Manual* guides the user through a specific phase: from research and preparation, setting the strategy and business model of the company through building the roadmap and implementation through to the final review phase. It details the process and provides tools to be used in each of these phases. It also gives practical examples of each step of the process and the application of the recommended tool through a learning case study.

This Manual is a working version to be applied during the national level implementation of the UNEP Eco-innovation Project, which entails a pilot-application of eco-innovation in approximately 40 SMEs across Latin America and the Caribbean, Asia Pacific and Africa. Sector specific supplements to the manual are also being developed for the agri-food, metals, and chemicals sectors and used for the pilot application. Based on the feedback from this pilot application phase, the final *Eco-innovation Manual* will be further refined for final publication by May 2017.

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